

The Dissertation Story: What is the relationship between the Officer Candidate
School attrition rate and Officer Training Command, Naval Service Training Command
and Navy Recruiting Command leadership intervention?

by

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As members of the dissertation committee for Rusty Hagins, and on behalf of the Doctoral Program at Cardinal Stritch University, we affirm that this report meets the expectations and academic requirements for the Ed.D. degree in Leadership for the Advancement of Learning and Service.

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Approval Date

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I have been blessed with two enduring relationships which have been my sources of influence, shaped my personal and professional values and provided direction for achieving personal and professional purpose.

Anita O'Brien Hagins has been my friend, mentor and partner since the Carter Administration. Through, good times and bad moments, sickness and health, we have honored and cherished our marriage, friendship and partnership. Anita's faith and confidence in me has sustained me during countless episodes of self-doubt. With her support and love, I have felt empowered to take on the most arduous personal and professional challenges with confidence. Anita makes me whole and makes smooth my many rough edges. I am complete and at peace with her by my side.

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Abstract

The Dissertation Story: What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

The intervention and mitigation executed by Officer Candidate School (OCS) leadership was assessed to determine if the actions made a difference in 2011 and 2012 attrition rates. The research approach employed a quantitative descriptive analysis of Officer Candidate School attrition employing a case study methodology. The research design involved the collection and analysis of archival data that are routinely collected by Navy Recruiting Command and Officer Training Command production.

The study validated the initial assumption that military accession training attrition is not simply a function of applying a predictive model to recruit and screen individuals. Leadership of training organizations has an inherent responsibility to implement policy and practices designed to reduce attrition of volunteers for military service. Leadership of training organizations cannot abdicate responsibility for students not completing training by simply attributing losses to inadequate predictive modeling, poor screening and bad selections by recruiting organizations.

The OCS attrition rate was reduced when leadership intervention in the form of realistic job previews, socialization and leadership policy and practices that are informed by mindful understanding of intelligence and capacity of staff and students were combined with predictive modeling techniques designed to screen and select the best applicants.

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CHAPTER ONE: INTRODUCTION

Background of the Study

Statement of the Problem

In 2010, over 40,000 young Americans volunteered to serve in the United States Navy in wartime. These individuals were extensively screened and tested for mental, physical, and moral eligibility for military service before reporting to Recruit Training Command (RTC) in Great Lakes, Illinois or Officer Candidate School (OCS) in Newport, Rhode Island. Just fewer than 4,000 of these individuals did not complete initial training and returned home without fulfilling their desire to serve. The cost to recruit, screen, test and partially train these individuals exceeds \$20,000 per recruit or officer candidate (Cheney, 2011). Does the opportunity exist to reduce this approximate \$800,000 cost and more importantly is there an opportunity to provide mitigation during accession training that will result in these individuals completing initial training and proceeding with their service?

Recruit Training Command is the only Navy enlisted sailor accession training source. Over 35,000 civilian volunteers are annually transformed into sailors following their eight week course of instruction designed to develop basic skills that will be enhanced throughout a continuum of training throughout a sailor's career. Following graduation from RTC, the new sailor starts a training pipeline tailored to his or her occupational specialty chosen during the recruiting process. Individual skills training varies between each career field and can range from less than a month to just under two years.

Officer Candidate School (OCS) is one of three commissioning sources for unrestricted line (serving in aviation, surface ships or submarines) officers entering the United States Navy each year. Approximately 2,500 unrestricted line officers are commissioned annually with production apportioned between the United States Naval Academy, Naval Reserve Officer Training Corps and Officer Candidate School (OCS). The instruction delivered to the students is similar but varies given the differences in the accession programs. Naval Academy and Naval Reserve Officer Training Corps Midshipmen are under instruction for four years during their undergraduate studies. Officer Candidate School provides a twelve week concentrated program for all college graduates direct entry into the Navy. In all cases the Naval Science curriculum is based on ensuring that all graduates have met the minimum standards of United States Navy Profession Core Competencies.

This study focused on the response by Officer Candidate School (OCS) to an increased rate of attrition during 2010. The intervention and mitigation executed by OCS leadership will be assessed to determine if the actions made a difference in 2011 and 2012 attrition rates and whether similar actions should or could be attempted by leadership of other Navy accession training programs. By comparison, Recruit Training Command accession training policies and procedures remained unchanged during the period 2010-2012. The attrition rates for Recruit Training Command and Officer Candidate School were compared.

OCS Course of Instruction

The twelve week course of instruction at Officer Candidate School is divided into three four-week blocks; indoctrination, academics, and leadership. The indoctrination block focuses on ensuring that Officer Candidates successfully and immediately transitions from civilian to military life. Most aspects of the Officer Candidates' day are under the direct supervision of others. This is an intense and demanding period requiring that the Officer Candidate demonstrate the ability to follow orders and respond to mental, physical, and moral challenges designed to immediately identify those who are not suited for military service. Successful completion of the indoctrination phase is essential. The academic and leadership phases which follow are no less demanding than the indoctrination phase. The academic phase provides a concentrated course of study on Naval History, Naval Operations, Navigation, Naval Engineering and other topics required to meet minimum Professional Core Competency requirements. The leadership block of instruction is designed to allow the evolving and now senior Officer Candidate to lead other Officer Candidates who are in the indoctrination and academics phases. The skills developed during the leadership block are practical skills that the Officer Candidate will require during their first operational assignment leading Sailors.

The indoctrination phase of Officer Candidate School starts upon arrival at Officer Training Command. Officer Candidates are under the very close and intense supervision of a Class Officer, a Navy Lieutenant with recent operational experience, a Navy Chief Petty Officer trained as a Recruit Division Commander and United States Marine Corps Drill Instructors. This phase of training is regimented and structured in

order for the Officer Candidates to quickly adapt to military standards with respect to all aspects of their daily routine. Candidates rapidly become adept at military drill (marching and facing movements), wearing of uniforms, meeting grooming standards and expectations of military decorum, military terms to identify objects and activities, the manual of arms (formations and ceremonial performance) and around the clock physical conditioning. The militarization focus during this phase sets the conditions for successfully transitioning to the academic and leadership phases of the course. In addition to the Class Officer, Recruit Division Commander and Drill Instructors, the candidates are mentored and instructed by Officer Candidates in their ninth through twelfth week of instruction. Advancement to the next phase of instruction, academics, is dependent on passing capstone training events which demonstrate mastery of basic militarization skills, abilities and competencies as well the artificially induced stress necessary to assess the resiliency of the Officer Candidate and his or her disposition for military service.

During the academic phase of the course, Officer Candidate School staff subtly changes the way the candidates are treated individually and as a class. While the focus of militarization remains as the underpinning of the entire twelve week curriculum, the candidates are incrementally given discretionary control over their activities during weeks five through eight. As the candidates focus on academic course work, they spend the majority of their day in the classroom and their evenings preparing for class the following day. The pace of instruction is fast and the curriculum is challenging. The transition to the final leadership phase requires successful completion of the academic

course work on naval operations and seamanship, sea-power and naval history, navigation, engineering, weapons and leadership. Additionally the candidates are required to pass a rigorous and stringent uniform, locker, and room inspection in order to validate the sustainment of the exacting military standards taught during the indoctrination phase.

During weeks nine through twelve, the candidates lead and mentor candidates during the indoctrination phase while also mastering the skills necessary to lead Sailors following Officer Candidate graduation and commissioning. It is during this final phase in which candidates gain additional freedom while learning firsthand about the accountability and responsibility which comes with earning the rank of Ensign in the United States Navy.

Attrition of Officer Candidates from Navy Officer Candidate School for fiscal year (FY; October - September) 2010 was 14.6% (1,342 candidates/1,146 graduates/196 attrite) (Ennis, 2012). While there is no stated standard established for an acceptable rate of attrition, 14.6% was viewed as unacceptably high by the Chief of Navy Personnel and Commander Naval Education and Training Command. Commander Naval Service Training Command and the Commanding Officer of Officer Training Command were directed to lower Officer Candidate School attrition to an unspecified rate in FY11.

The lack of a standard of performance for accession training is problematic. Leadership of training commands are concerned that stating an acceptable attrition rate risks the perception that training standards are lowered in order to meet what is viewed as an arbitrary metric. Consequently, leadership is faced with an ambiguous situation.

Leaders are expected to maintain training standards while not exceeding an unstated but nonetheless expected rate of attrition below 10%. When attrition exceeds 10%, the leaders are called to task to explain why their attrition rate exceeds a standard that has not been set. Assuming that their mission is to maintain training standards and thereby accept the natural attrition which results, the leaders assume that they have met their commander's intent. When called to task for high attrition rates, the leaders are naturally puzzled at being held accountable for what appears to be an arbitrary goal.

Commander Naval Service Training Command did the unexpected when faced with increasing Officer Candidate School attrition late 2010. He provided the Officer Training Command commanding officer with a goal of 10% attrition. By providing the commanding officer with a goal, Commander Naval Service Training Command caused Officer Candidate School leadership to complete a comprehensive review of training policies, practices, and procedures. The response from leadership was not to artificially lower training standards to meet the 10% goal but instead to determine how the school could lower attrition while maintaining standards.

History of the Problem

Officer Candidate School production at Officer Training Command is part of Navy supply chain management system. In order to gain efficiencies in manpower, personnel, training, education and distribution of uniformed personnel, the Navy adopted language and methodology designed to emulate practices used in private industry. The premise of supply chain methodology is that the Navy acquires raw material (recruits)

that is processed or developed (trained) and then shipped (ordered or distributed) to global customers (operational commands).

It is no coincidence that Navy Recruiting Command and Navy Personnel Command, headquartered in a suburb of Memphis, Tennessee, view the supply chain through a prism shaped by the influence of Federal Express, the global shipping company. An implied task for Navy Recruiting and Personnel Commands is to make Sailor recruiting, development and distribution follow Federal Express like policies and processes. Application of Federal Express terminology and processes has improved inefficient Navy recruiting, development and distribution practices. The Navy is adept at delivering the right Sailors at the right time to the right place. This was not always the case. While there are similarities between acquisition, processing, and distribution of packages and Sailors, packages are inanimate objects and Sailors are human beings. Sailors, unlike packages, make choices and decisions which may disrupt the most detailed recruiting, development, and distribution plans. Sailors also get sick or injured and can either choose to stop training or be forced to stop training for physical, academic or ethical reasons. Still, the use of supply chain terms has helped improve Navy practices.

The supply chain starts with attracting and recruiting individuals for volunteer service in the Navy by Navy Recruiting Command. The next step in the supply chain is accession training. All accession training, with the exception of the United States Naval Academy is the responsibility of Naval Service Training Command. Individual skills training follows accession training. Naval Education Training Command is responsible

for both accession and individual skills training and serves as the parent command for Naval Service Training Command. The final step in the supply chain is distribution to the fleet by Navy Personnel Command. The Chief of Navy Personnel is accountable and responsible for the entire street to fleet supply chain process.

Officer Training Command is a subordinate command of Naval Service Training Command. Officer Candidate School is one of five schools located in Newport, Rhode Island at Officer Training Command. Officer Candidate School is the largest production line of Navy unrestricted line officers producing approximately 1,000 officers annually. The Navy Recruiting Command Operations Officer reports that the cost to recruit an individual Officer Candidate for Officer Candidate School is \$18,000 (\$18K) (Schultheis, 2012). The Naval Service Training Command budgetary cost model estimates the cost per copy of Officer Candidates who graduate from Officer Candidate School and are commissioned as a Navy Ensign is \$22K. Attrition is a cost for the Navy supply chain. While the rate of acceptable attrition is not defined, it is assumed that attrition will occur and is best to occur early in the supply chain during accession training. No break-even point is defined with regards to attrition. In discussing attrition, leadership is not inclined to define an acceptable rate of attrition. While preferring lower rather than higher attrition, some attrition is absorbed as a cost of doing business. Leadership is concerned that a defined acceptable rate of attrition will drive arbitrary behavior in order to meet a target attrition rate.

Current Status of the Problem

FY11 Officer Candidate School attrition declined from the FY10 rate. Attrition for FY11 was less than 10.2% (992 candidates/891 graduates/101 attrite). The Officer Training Command Commanding Officer and Naval Service Training Command – Navy Recruiting Command headquarters staffs initiated actions in 2010 to reduce attrition. The establishment of formalized feedback process from Officer Training Command to Navy Recruiting Command via Naval Service Training Command provides the Recruiters with a method of assessing the processes and practices used in the field to prepare prospective candidates for accession training. Specifically, the feedback on physical readiness to train informs how recruiters mentor the potential candidates with regards to physical readiness. Information on the candidates' rationale for drop on request after a brief period of instruction is insightful for recruiters in identifying traits and characteristics of less motivated individuals as the recruiters work with potential applicants. Initial indications are that these mitigating actions have had the desired effect in reducing attrition.

In June 2010 the Commanding Officer met with the Officer Candidate School staff and provided detailed policy guidance to Sailors and Marines responsible for military orientation training. The policy guidance included general overall commander's intent as well as very specific information with regards to handling and treatment of Officer Candidates. The new Commanding Officer viewed the command's mission as training-in versus weeding out. Weeding out focuses on quickly assessing the viability of candidates and culling those deemed not worthy. Training in instead focuses on ensuring

the success of all who have volunteered to serve. The staff questioned this new approach and expressed concerns that through lowering attrition, Officer Candidate School would simply be giving unworthy candidates a free pass in order to complete training and earn a commission. The Commanding Officer assured the staff that this was not the case and that standards would be maintained and strengthened on his watch. Nonetheless, the performance standards for Officer Candidate School staff under the new Commanding Officer changed to reflect an expectation for training the cohort of Officer Candidates into the Navy versus striving to weed out Officer Candidates who met minimum Officer Candidate School qualifications during the recruiting process.

The Commanding Officer provided the staff with specific guidance on handling and treatment of Officer Candidates during military orientation training. Staff could no longer make physical contact with the Officer Candidates and were cautioned to stay at least four inches from Officer Candidates during verbal counseling and directive guidance. The goal of military indoctrination training is to ensure that the student is acutely aware of a change in their life and responsibilities as they transition into the military. The “shock and awe” of this transition is deliberate and designed to put the individual under mental, emotional, and physical stress. Extreme measures, such as using loud voices during indoctrination training can easily get out hand and go beyond deliberate stress. The Commanding Officer’s policies on handling and treatment of Officer Candidates were designed to meet training objectives without evolving into counterproductive and extreme measures which may cause an individual to quit training and drop on request.

In response to an attrition rate exceeding 14%, Naval Service Training Command staff and Navy Recruiting Command staff held a series of meetings in late Fall 2010. In January 2011, the two staffs agreed to several process initiatives designed to provide Navy Recruiting Command with feedback on the readiness of Officer Candidates upon arrival at Officer Candidate School. The Commanding Officer Training Command provided Naval Service Training Command with an assessment of physical readiness of the Officer Candidate School after the completion of week one. The first week is an intense military orientation period with an emphasis on physical readiness and mental resilience. Naval Service Training Command and Navy Recruiting Command staffs agreed that Officer Candidates unable to perform to standard during week one were not adequately prepared by the Navy Recruiting District prior to being shipped to Officer Candidate School. The goal of the Officer Candidate School feedback is to inform Navy Recruiting Command processes designed to prepare Officer Candidates for shipping to Officer Candidate School.

A significant portion of Officer Candidate School attrition is due to drop on request during the military orientation phase of Officer Candidate School. Drop on request is simply the ability to quit training and return home without consequence. Lack of desire or motivation is often cited by the Officer Candidate. Before receiving their discharge, the Officer Candidate is interviewed by the entire Officer Candidate School leadership organization, including the Commanding Officer. These interviews provided the Commanding Officer with a telling narrative with regards to the Officer Candidates preparation for Officer Candidate School. Naval Service Training Command agreed to

provide copies of the drop on request packages to Navy Recruiting Command as means to provide feedback to the Navy Recruiting District on trends related to Officer Candidates' motivation to serve and readiness to train at Officer Candidate School. The documents provide great insight to the Navy Recruiting District and serve as a catalyst for process improvement with Officer Candidate selection and preparation.

Many of the drop on request packages cite a lack of familiarity with Officer Candidate School prior to arrival at the school. The video "Faces of OCS" was supposed to be viewed by all Officer Candidates prior to shipping to Officer Candidate School. During staff discussions, Navy Recruiting Command reported that the recruiting Districts and Recruiters perceived that the existing video was perceived as out of date and not that video was not recruiting districts had copies of or access to the video. The staffs agreed to jointly produce a new video which reflects current training and ensure that the video is available to the recruiting districts for mandatory viewing by the candidates prior to shipping.

Theory and Action Related to the Problem

The declining rate of attrition appeared to be directly related to the exercise of leadership responsibility by the Commanding Officer and the two headquarters staffs. Attrition is not a fixed cost to the Navy supply chain. While predictive models are important in recruiting and selection, attrition rates can be influenced by leadership mitigating action. Additionally, Officer Candidates are able to drop on request at any time during the course of instruction. A majority of the drops on request occur during the military indoctrination phase of training. If the incidence of drop on request during the

military indoctrination phase can be reduced, overall attrition should be reduced significantly. Drops on request are a contributing factor to the attrition rate and leadership action influences the incidence of drop on request.

Attrition during military training has been historically addressed through validation of predictive modeling for recruiters to use during selection and placement of applicants. Attrition of recruits during training was assumed to be the result of inadequate or incomplete screening of applicants by recruiters. Scant effort has been devoted to other areas in the belief that accession training success was solely influenced by predictive modeling. Individuals who failed to complete accession training were viewed as somehow getting past vigilant screening. Corrective action was focused on improving the screening done by recruiters as opposed to looking at the training command for mitigation.

While there is no argument that validated predictive models are the foundation for ensuring the success of recruits in military training, other efforts appear to hold promise for influencing attrition rates. The rationale for the research question is to assess the effect of leadership intervention through application of realistic job previews, socialization and policy changes that are all predicated and built on a foundation of validated predictive models for selection of applicants. Previous research establishes the efficacy of realistic job previews, socialization and policy changes with regards to reducing attrition.

The literature articulates how realistic job previews prepare individuals for the indoctrination and training that awaits them following recruiting. The premise of realistic

job previews is that a recruit who is forewarned is forearmed for the demanding challenges of accession training. Research additionally demonstrates how socialization of recruits with one another and those delivering training has the desired effect of ensuring that recruits do not objectify one another and the training staff while also preventing objectification of recruits by the trainers. Socialization sets the conditions for recruits to gain a stake in success of others and for the trainers to have ownership of the success of recruits under their leadership. Finally, research explains how policy and practices of leadership at training commands and their higher headquarters can set the conditions for success of those under training by ensuring that trainers are not encouraged or rewarded for behavior and conduct that facilitates attrition. Policy and practices which facilitate a cohort approach to accession training where success is designed as all that start will finish appear to have lower attrition.

Need for Further Study of the Problem

Accession training organizations have historically viewed attrition rates as a function of the quality and quantity of predictive modeling which occurs during recruitment, selection, and placement prior to accession training. A better understanding of how leadership action or inaction influences attrition rates is needed in order for the Navy supply chain to reduce, control and predict the costs for producing officers from Officer Candidate School.

Purpose of the Study

The purpose of this study was to measure the effect of leadership engagement to address Officer Candidate School attrition. The research question: What is the

relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

Approach of the Study

Given the research purpose of measuring the effect of leadership action on attrition rates, the design is a quantitative descriptive case study employing review of archival data as the primary data collection method. The study also provides a literature review of related research and theory in the areas of attrition from the military.

The primary data were queried from the Navy Corporate enterprise Training Administration Resource System (CeTARS) database. CeTARS is the primary and centralized database for all Navy training commands. CeTARS functionality includes the ability to track start, completion, and attrition of students by course. Officer Candidate School attrition is computed using the cohort method (starts/graduation by class) as opposed to the student flow method (in/outs or starts/graduations). Attrition is coded by categories of reasons entered by the training command. The primary reasons for attrition are drop on request, inability to meet academic or physical standards and not physically qualified. Officer Training Command additionally has the option of rolling an Officer Candidate back if the individual has the desire and aptitude to complete the course of instruction but may need remediation on military, academic or leadership standards.

Significance of the Study

The influence of leadership action to reduce attrition is not clearly understood nor appreciated. The desired effect is the ability to potentially apply the policies, practices

and procedures used to mitigate the rate of attrition at Officer Candidate School to other accession training programs. Optimal use of the resources required to support Navy recruiting and training as part of larger personnel supply chain necessitate efficiencies and best practices given current and future fiscal constraints. While it may be impractical to attain near-zero attrition, reducing attrition to the extent possible will ensure that the resources used to recruit and train candidates results in a commissioned officer as opposed to an unsuccessful Candidate who fails to complete from Officer Candidate School.

Uniqueness and Compatibility of the Research

This study documents the specific effect of tactical leadership action by the Commanding Officer of Officer Training Command and the more strategic leadership action by the Naval Service Training Command and Navy Recruiting Command staffs to reduce attrition in FY11 and FY12. The research validates whether the efforts of Officer Training Command, Naval Service Training Command and Navy Recruiting Command to address attrition had an effect. The research substantiates the criticality of predictive modeling and assesses whether predictive modeling in combination with realistic job previews, socialization and policy changes had an effect on attrition.

Contribution to Knowledge, Theory, and Practice

The desired effect is the ability to apply the combination of tactical and strategic mitigation efforts used in this specific case study within other accession training programs. The application of these policies, practices, and procedures are intended to

reduce recruiting and training costs, and increase opportunities for individuals who volunteer for Navy service to complete accession training and subsequently serve.

Delimitations and Limitations of the Study

This study specifically focused on the leadership actions taken by the Officer Training Command Commanding Officer and Naval Service Training Command – Navy Recruiting Command staffs to address attrition at Officer Candidate School during the years 2010 – 2012.

Officer Candidate School is a 12-week course of instruction held at Officer Training Command in Newport, Rhode Island. The 12-week curriculum is divided into sequential trimesters; indoctrination, academics, and leadership. Officer Training Command is a subordinate command of Naval Service Training Command located in Great Lakes, IL. The students are referred to as Officer Candidates. The majority of the candidates are prospective Navy unrestricted line officers who will enter surface, sub-surface, and aviation warfare training following graduation and commissioning. candidates who are not destined for a URL community will enter restricted (specialized) or staff corps officer communities.

Assumptions

Military accession training attrition is not simply a function of applying a predictive model to recruit and screen individuals. Leadership of training organizations has an inherent responsibility to implement policy and practices designed to reduce attrition of volunteers for military service. Leadership of training organizations cannot

abdicate responsibility for attrition by simply attributing attrition to inadequate predictive modeling, poor screening and bad selections by recruiting organizations.

The quality and quantity of prospective recruited and entering training in FY 10 were comparable to the population in FY11/12. Changes in economic conditions (civilian career opportunities) determine quality and quantity of prospective and actual candidates. Economic conditions in FY10 and FY11/12 were comparable.

Moreover, the study assumed that attrition is not fixed and that when incentivized, leadership practice policies and procedures can be modified, adjusted, revised and tailored in order to have effect on attrition.

Parameters

The reason for and timing of attrition from OCS was measured and compared by reason code for attrition. A special emphasis was placed on measuring the rate and timing of attrition by drop on request, the largest category of attrition.

Timeframe

Attrition from Officer Candidate School in FY 10, 11 and 12 was measured and compared for the three fiscal years. Officer Candidate School is a twelve week course of instruction with approximately 16 classes of up to 100 officer candidates per class convening each fiscal year.

Vocabulary of the Study

For consistency of interpretation, the following terms are defined:

Attrition: An Officer Candidate enrolled at Officer Candidate School who does not graduate and commission as a United States Navy Officer.

Cohort: The group of Officer Candidate Schools who start training together within one class convening.

Drop on request: The ability of Officer Candidate to request to dis-enroll and stop training at any time during the course of instruction. Dropping on request is consistent with the concept of volunteer service in the United States Navy.

Navy Recruiting Command: Responsible for attracting and recruiting enlisted and officer volunteers entering Navy service. NRC headquarters staff is located in Millington, TN.

Naval Service Training Command: Parent command for Officer Training Command. NSTC is responsible for (98%) of Navy accession training, with the exception of the United States Naval Academy. The NSTC headquarters staff is located in Great Lakes, IL.

Officer Candidate School: OCS is 12 week course of instruction held at Officer Training Command in Newport, Rhode Island. The 12 week OCS curriculum is divided into sequential trimesters; indoctrination, academics and leadership. OTC is subordinate command of NSTC located in Great Lakes, IL.

Officer Candidates: Officer Candidate School students are referred to as Officer Candidates. The majority of OCs are prospective Navy unrestricted line officers who will enter surface, sub-surface and aviation warfare training following OCS graduation and commissioning. OCs who are not destined for a URL community will enter restricted (specialized) or staff corps officer communities.

Officer Training Command, Newport: Parent command for Officer Candidate School. OCS is one of five courses of instruction delivered by the command.

Summary and Forecast

This introductory chapter presented an overview of the study through description of the background, purpose, approach, significance, delimitations and limitations, and vocabulary of the research. Chapter Two constructs the theoretical framework of the study through a review of literature related to the research questions. Chapter Three describes the research design employed to conduct the study, with particular attention to methodology and technique applied to data collection and analysis. Chapter Four presents the study results in the form of data generated and analyzed through application of the research design. Chapter Five presents a discussion of study findings and conclusions related to the research questions and reviewed literature. This concluding chapter also addresses the implications of the findings for practice and research, as well as leadership, learning, and service.

CHAPTER TWO: LITERATURE REVIEW

Purpose of the Study

The purpose of this study was to measure the effect of leadership engagement to address Officer Candidate School attrition. The research question: What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

This chapter reviews literature addressing research and theory related to the study in the areas of military attrition. A summary analysis of prominent themes and findings within the reviewed literature is presented at the end of the chapter. A significant amount of literature from the 1970s and 1980s was reviewed and included within the study. This seminal research was conducted to support the transition to an all-volunteer force following the Vietnam conflict. It appears that the heavy reliance on predictive modeling that serves as the sustained foundation for military selection and placement policies that are in place today originated with the research conducted during this era. The influence of other factors affecting attrition is at best a secondary or tertiary research consideration.

Theoretical Framework

While the Finstuen and Barry (1981) provide the seminal research on the efficacy of predictive modeling, the literature is replete with studies emphasizing the importance of predictive modeling and testing to screen and select applicants for military service. Nonetheless, military accession training attrition is not simply a function of applying a predictive model to recruit and screen individuals. Leadership of training organizations

has an inherent responsibility to implement policy and practices designed to reduce attrition of volunteers for military service. Leadership of training organizations cannot abdicate responsibility for attrition by simply attributing attrition to inadequate predictive modeling, poor screening and bad selections by recruiting organizations.

While there is no argument that validated predictive models are the foundation for ensuring the success of recruits in military training, other efforts appear to hold promise for influencing attrition rates. Realistic job previews prepare individuals for the indoctrination and training that awaits them following recruiting. The premise of realistic job previews is that a recruit who is forewarned is forearmed for the demanding challenges of accession training. Socialization of recruits with one another and those delivering training has the desired effect of ensuring that recruits do objectify one another and the training staff while also preventing objectification of recruits by the trainers. Socialization sets the conditions for recruits to gain a stake in success of others and for the trainers to have ownership of the success of recruits under their leadership. Finally, policy and practices of leadership at training commands and their higher headquarters can set the conditions for success of those under training by ensuring that trainers are not encouraged or rewarded for behavior and conduct that facilitates attrition. Policy and practices which facilitate a cohort approach to accession training where success is designed as all that start will finish appear to have lower attrition.

Review of Research and Theory about Predictive Models for Attrition

The research question for Finstuen and Berry (1981) was to determine the correlation between 27 independent variables for all Air Force recruits along with 186

binary variables for Air Force occupational codes to assess the ability to predict attrition and retention. The large sample population of over 280,000 over a three-year study period ensured the validity and reliability of this comprehensive study. The research determined that the independent pre-enlistment variables (age, gender, aptitude, education, marital status, etc.) were highly predictive with regards to attrition and retention. Additionally, the research determined that there are differences in attrition retention behavior among occupation codes.

The research reinforced the reliance on, and importance of, predictive modeling to address attrition and retention. Finstuen and Berry provided extensive narrative that explained their findings but did not provide statistical tables and other quantitative information that would have further buttressed their findings. The work is not suspect, but the narrative findings, along with data, would have been more convincing. The work additionally attempted to combine the predictive model with survey data on attitudes and job satisfaction to predict reenlistment or voluntary separation patterns. This additional effort appeared to state the obvious, high job satisfaction was more closely correlated with retention behavior than attrition. The implications of this focus on predictive models articulated the correlation between the variables used to predict success of individuals during the selection and placement process and attrition and retention behavior on the individual Airmen. Consequently, the potential for policies, practices and procedures of Air Force training and operational organizations to influence attrition and retention actions received less focus with the strong emphasis placed on predictive modeling.(Finstuen & Berry, 1981).

Elster and Thomas (1981) provide a summary of Naval Postgraduate School (NPS) thesis work completed by active duty personnel researching attrition and retention behavior. The summary illustrates the strong emphasis placed on predictive modeling through analysis of variables related to individual characteristics or traits such as age, gender, racial, or ethnic identity, aptitude, education, and marital status. The academic research on the topic of attrition and retention places heavy emphasis on the ability of predictive modeling to predict success of recruits entering the service. The NPS research additionally analyzed the use of standardized aptitude tests to better predict the success of recruits. The frequency of the thesis work on attrition and the examination of improving or enhancing predictive modeling by NPS students represent a significant investment by the school in this topic. Despite the vast quantity of research work done on this topic, the research update did not offer substantive or quantitative material to validate the premise that attrition and retention are best managed through the use of predictive modeling (Elster & Thomas, 1981).

Blandin and Morris (1981) sought to develop an actuarial regression model to assess risk of attrition for Army enlistees who are non-high school graduates. This research further compared the predictive ability of a multivariable model versus Armed Forces Qualification Test (AFQT) scores with regards to attrition. Blandin and Morris articulate a strong case for using predictive models to efficiently recruit, screen, and place applicants. Given the technical nature of Navy occupational ratings (occupations or trades) and the hidden knowledge, skills, and competencies such information technology or gaming fluency that are often not used to meet high school graduation requirements,

binary sorting and screening, with regards to whether or not an individual has graduated from high school, will not suffice in a challenging recruiting environment. Historically, recruiters have sorted and screened applicants based on whether the individual had graduated from high school. High school graduates were assumed to be more successful in completing initial training and subsequently completing a first enlistment. The population of high school graduates eligible for and interested in volunteer service in military is decreasing. In order to meet recruiting and accession goals, Army recruiters will need to give strong consideration to non-high school graduates. This purpose of this research was to develop a more nuanced selection and screening criteria beyond high school graduation status (graduate or non-graduate) and AFQT performance. Further, the study sought to discriminate, within the population of non-graduates, the target subsets within this larger group who have greater potential to succeed during initial training and to complete their first enlistment.

The study assessed 178,380 Army recruits over a three-year period in order to first construct a model based on two years of data and, then, collect data to assess the model in the third year. The period assessed and the large sample size ensured the validity and reliability of the study in order to generalize with regards to the results. The variables assessed included age, race, or ethnicity, highest year of education, month entered the service, geographic region, or origin within the United States, and AFQT category. The model that was constructed allowed for comparisons among candidates regarding the likelihood of attrition. The assumption at the start of the study, that the likelihood of attrition among all non-high school graduates was similar, was invalidated.

The results indicate that there are differences within this group. More years of high school education reduced the likelihood of attrition. Individuals with less than three years of high school education were more likely to attrite. Younger applicants were also more likely to attrite. Applicants from the Mid-Atlantic, East North Central, and East South Central Regions were also more likely to attrite. In addition, applicants with lower AFQT scores had a higher probability of not completing their enlistment. The multivariable model more accurately predicted the likelihood of attrition in comparison to either consideration of high school graduation status (graduate or non-graduate) or AFQT results.

The validity and reliability of predictive modeling was substantiated by the study. The study informed the development of Army recruiting policy, strategy, and tactics. The study provided quantitative justification for targeting specific subpopulations of potential recruits and for better apportionment of scarce resources to provide an optimal return on investment for recruiting. The study justified an investment in discriminating from within the larger population of non-high school graduates in order to target potential recruits who might otherwise be considered not eligible for service (Blandin & Morris, 1981).

Kubisiak, Horgan, Bryant, Connell, Tuttle, Borman, and Morath (2009) presented a holistic and systematic process to address attrition. The work provides insight into initiatives, policies, and programs from all of the armed services for reducing attrition and increasing retention. The effort addresses screening during recruiting, as well as interventions during initial training and subsequent to training. This serious and

comprehensive publication should serve as a road map for a way ahead to reduce attrition.

Kubisiak, et al. discuss several dimensions of screening predicated on predictive modeling to recruit and select the best candidates with the lowest risk of attrition. The first dimension relates to use of testing instruments to assess self-reported data by the applicant on demographics, attitudes, and behaviors. The bio-data and temperament data collected helped to generate empirical relationships between past experiences and future behaviors such as attrition from military training.

Kubisiak, et al. confirm that high school graduation status remains the best predictor of successful completion of military indoctrination training. Individuals who did not graduate from high school are at greater risk of attrition from military training. Similarly, individuals with arrest records prior to military service were at greater risk for attrition than individuals without an arrest record prior to joining the military. Individuals who graduated from high school and enter the service without an arrest record were assessed as the best candidates.

The Navy uses an applicant self-reported Armed Services Applicant Profile to sort candidates based on biographical data, work history, educational achievement and moral character. The Air Force uses similar self-reported data from applicants to sort and screen potential recruits. The Navy further assesses candidates according to self-reported health and fitness data. The health inventory and medical history data positively correlates with risk of attrition from initial training.

The second dimension reported by Kubisiak, et al. is psychiatric screening. Historically, interviews with applicants and recruits generate profiles which determine whether an individual has characteristics that are compatible with military service. Surprising, this practice was prevalent in the post-World War II era through the 1960s and is not currently an integral component of screening and selection today.

The third dimension of screening discussed by Kubisiak, et al. relates to physical fitness and readiness. All of the military services conduct some standardized physical assessment of applicants to ensure that applicants meet minimal standards of physical fitness prior to initial training. The assessments include aerobic fitness, strength, and flexibility. Body composition assessments of applicants are also completed to ensure that the individuals are within height and weight standards prior to enlistment. Applicants unable to meet minimum standards are encouraged to participate in fitness enhancement programs and then reapply for consideration by the services. The services all report that poor physical fitness is a significant disqualifying factor in screening applicants.

Pre-service drug testing is additionally conducted for all applicants prior to enlistment. Abuse of controlled substances, as well as prescription drugs are endemic among the target population for military recruiters. The wide-spread use of prescription medicine for hyperactivity and depression for high school age or younger adolescents has made recruiting of this demographic a challenge.

The fourth dimension reported by Kubisiak, et al. is composite screening using a multivariable approach which provides the services with an optimal balance of risk and opportunity when assessing whether individuals volunteer for military service. A

multivariable approach to screening applies a validated predictive modeling methodology to recruiting and hiring practices. Individuals with attitudes, experiences, or traits that are correlated with risk of attrition may still be eligible for service, but only after the recruiter determines if the individual situation merits a waiver or special dispensation prior to enlistment (Kubisiak et al., 2009).

Andrew (2009) provides a recent validation of predictive modeling for screening and selection of applicants to serve in the Navy. Demographic characteristics such as age, marital status, dependency status, gender, race, ethnicity, AFQT scores, and education credential are considered in the analysis. Regression models were constructed to assess these characteristics as predictive of attrition during the sailor's first term enlistment. The data for four years were analyzed and the results indicated that reliance on self-reported education levels and education credentials earned beyond high school were flawed in predicting attrition. The analysis determined that attrition within the first 90 days of service (including military indoctrination training) and attrition after the first 90 days of service was attributed to different factors and therefore required different predictive models. The analysis also determined that whether a single sailor has dependents (children in most cases) was the most significant factor in predicting attrition once education and AFQT score had been blocked.

Andrew found that applicants completing a traditional high school education and who also had higher AFQT scores were less likely to experience attrition. Applicants with a non-traditional high school experience (home-schooled or passed an equivalency examination) were more likely to experience attrition. Education beyond high school

correlated to an even greater likelihood of success in the military. Converting non-traditional high school education experience and attempting to aggregate post-high school experience using a complex formula in order to evaluate applicants did not improve the ability to predict attrition with these individuals. This finding should simplify the process for recruiters. The target population should consist of traditional high school graduates with high AFQT scores. Nonetheless, the populations of home-schooled and those with choose to pass equivalency tests are growing. Recruiters cannot continue to meet recruiting goals by only targeting traditional high school graduates with high AFQT scores. Predictive models will need the ability to assess the viability of applicants with non-traditional educations and less than optimal AFQT scores.

Aside from education and AFQT, single sailors with dependents were assessed as the most likely to experience attrition. This finding is both useful and challenging. Knowing that this group experiences high attrition should translate into less targeting of this demographic by recruiters. Yields from this group appear to have reduced return on investment. Nonetheless, recruiters cannot marginalize or ignore this large demographic group when attempting to meet recruiting goals. Multivariable assessments that include dependency status will need to be constructed, validated, and implemented.

The results of the study validated the predictive value of education and test score quality ($z = -39.01$). However, the results ran counter to the previously held assumption that the factors leading to attrition were consistent throughout an enlistment. The work found that predictive factors for attrition differ following the first 90 days of service, which usually includes military indoctrination training. Marital status was assessed as

statistically insignificant with regards to predicting attrition throughout an enlistment. However, those married with children were less likely to experience attrition after the first 90 days ($z = 2.39$); and those married without children experienced attrition at higher rates after the first 90 days. Females experienced attrition during the first 90 days at a higher rate than males. However, attrition for females was only one percentage point higher than males after the first 90 days. Older individuals experience attrition at a greater rate during the first 90 days, but are less likely to experience attrition than their younger colleagues after the first 90 days ($z = 4.13$). Simplistically, the implications for the Navy, given their viability following the first 90 days, are to consider mitigation strategies during accession training that helps married individuals with children, females, and older recruits survive beyond the first 90 days (Andrew, 2009).

Strickland conducted a six-year longitudinal study of the 1999 cohort of Army enlistees to identify mitigation strategies to reduce first-term enlistment attrition and encourage retention of these individuals beyond the first-term. Strickland's findings revealed that reasons for attrition differ after the first six months of service. For individuals within their first six months of service, professional performance and medical or physical factors were more prevalent reasons for attrition. Attrition following the initial six months is more likely due to moral character reasons with professional performance and medical and/or physical factors decreasing as likely reasons for attrition.

The focus of effort to address attrition throughout the first term remains on screening and selection of applicants. Strickland proposes a blended solution for screening and selecting enlistees who are at-risk based on predictive modeling. At-risk

enlistees could be barred from joining; alternatively, these individuals could be required to meet higher standards for criteria that predispose them to risk of attrition in order to be eligible for enlistment, aptitude, and medical and/or physical readiness (Strickland, 2005).

Allison, Knapik, and Sharp (2006) reviewed 15 basic variables related to physical readiness and medical history of 518 men and 316 women participant in Army Basic Combat Training (BCT). The intent was to create a predictive model for performance in the Army Physical Fitness Test (APFT), overuse injuries during BCT, and failure to complete BCT. The study produced a 91% correlation between test item clusters performed during medical diagnostic screening and AFQT performance or overuse injuries in men. The model was less reliable in predicting failure to complete BCT. The study did not advance the ability to predict overuse injuries for women. The research recommended additional study before wide-spread implementation of diagnostic testing. Additional effort will need to be applied towards enhancing techniques that may aid in predicting female overuse injuries. The study did not consider nor discuss the possibility of modifying the BCT training regimen, BCT course content, or additional training for BCT instructors that may contribute to better student performance and fewer injuries. The assumptions are that improved performance and reduced injuries during BCT result from a more precise screening of candidates (Allison, Knapik, & Sharp, 2006).

Gebicke's Congressional testimony focuses on better screening of applicants for disqualifying medical conditions and pre-service drug use as integral to lowering attrition and reducing Department of Defense (DoD) recruiting costs. Attrition during the first six

months of service (including accession training) ranges from 11.6% (Air Force) to 15.7% (Army and Navy). For all services, attrition is 14.4% during the first six months of uniformed service. Gebicke cites that eighty-three percent of those discharged during the first six months were separated due to medical disqualification; failure to meet performance criteria; fraudulently or erroneously entered the military; or had character or behavior disorders. Gebicke testified that the remedy for high attrition is to improve screening procedures and processes along with creating incentives for military screeners to identify unqualified individuals earlier in the process as opposed to during military orientation training. Gebicke estimates that a 4% reduction in attrition would translate into a \$4.8 million savings for the DoD in recruiting, training, and administrative processing costs. A 10% reduction in attrition could potentially yield \$12 million in savings. The testimony solely focuses on screening as a panacea for reducing attrition and does not consider modification of accession training policies and procedures as possible means to reduce attrition. The testimony does not appear to consider the demographic reality faced by recruiters that the population of individuals who are eligible for, and who volunteer for, service is declining. Better screening and assumed sustained standards may make meeting recruiting goals a challenge (Gebicke, 1997).

Vickers and Conway studied a population of 2,648 volunteers to assess the effects of stress during basic training and to determine the utility of modeling for predicting success during basic training and throughout a Marine's first-term enlistment. The study attempted to determine whether enhanced screening of applicants based on personal characteristics would reduce the risk of attrition. The study considered individual

differences for recruits in social background, coping mechanisms, defensive mechanisms, motivational measures, and general classification test scores. Each dimension was assessed by use of test instruments combined with a review of basic training records. The study found that general classification test scores provided the best predictor of success in completing basic training. The study also determined that individuals who were at greater risk of attrition during basic training were subsequently less successful after joining the Fleet Marine Forces. In addition to general classification test scores, years of education and a history of numerous high school expulsions were predictive of attrition during basic training and once in the fleet. The study assumed that recruiters would be able to optimize their efforts by testing and screening for personality traits and individual characteristics. This work fits a familiar pattern for all services of seeking a test instrument that is able to predict individual success during military indoctrination and throughout an enlistment. As with many other similar studies, this work, once again, validated two factors as predictive of success: aptitude test scores and completion of high school (Vickers & Conway, 1983).

Review of Research and Theory about Realistic Job Previews (RJP)

Holmen and Katter researched the population of individuals eligible to attend Army OCS. A 32-item questionnaire was given to 911 eligible OCS candidates. The study revealed that those eligible were not well informed about the expectations for their performance at OCS. The respondents tended to misjudge the relative importance of OCS requirements. The pre-OCS expectations of these candidates did not meet the reality of the actual OCS experience, causing many of the candidates to attrite before

graduation. The information held by the individuals overemphasized the importance of academics and underestimated the leadership component. Additionally, the respondents had an incorrect understanding of the service obligation for OCS graduates and the expectations for commissioned officers. In the absence of available information on the course and for performance following commissioning, individuals either made baseless assumptions or based their opinions of OCS on word-of-mouth and other ad hoc means. The study recommends the development of more comprehensive orientation materials and procedures in order to allow candidates to make more informed decisions regarding OCS prior to and during the school. It is assumed that these actions will reduce OCS attrition. While the study predates the use of the expression realistic job previews, the research argues strongly for RJP-like mitigation (Holmen & Katter, 1953).

Youngblood, Mobley, and Meglino researched the retention and attrition behavior of Marine Corps recruits during and after initial training. Their research question involved determining whether early leavers (those who left the service during Recruit Training) can be distinguished from later leavers (those who left the service after Recruit Training) based on components used in a model for predicting behaviors. Further, the research assessed whether later leavers could be distinguished from those who stayed and /or re-enlisted.

Marine Corps recruits were surveyed over a two-year period at crucial milestones in their career: Prior to initial training; after initial training; at advanced training; and at their initial duty station. The survey measured a range of perceptions and expectations associated with the recruit's Marine Corps experience. The results for this cohort provide

a correlation of survey responses to retention or attrition from the Marine Corps.

Demographics for the group were used to correlate retention or attrition behavior with gender, race or ethnicity, education, qualifying test scores, and age.

Attitudes and perceptions were assessed as contributing significantly to successfully predicting those who stray versus those who leave the service during their initial tour. Early leavers are differentiated from later leavers and those who stayed with regards to initial intentions, expectations, and attitudes. Early and later leavers were less inclined initially to complete their enlistment and had lower job satisfaction with the service prior to leaving the training pipeline than the group who stayed. From among the group who completed their first enlistment, predictive modeling based on demographics differentiated those who elected to reenlist from those who elected to leave the service.

Implications of the research are that measurement of attitudes and intentions along with demographics serve to better predict retention or attrition of first term recruits. Youngblood, Mobley, and Meglino postulate that RJP combined with enhanced socialization process prior to and during initial training would reduce first term attrition. The research makes a sound case for both interventions for alleviating recruit anxiety but fails to provide data to support the recommendation. The research would have been more convincing had it utilized experimental comparisons of recruits who were provided RJP and socialization interventions versus a control group who did not experience either or both interventions. The research makes a convincing case for both interventions, without necessarily proving the case for either (Youngblood, Mobley, & Meglino, 1981).

Lakota documented an experimental effort to provide Navy recruits with a three-day RJP prior to arrival at boot camp. The program combined classroom activities to provide basic information and develop skills along with a simulated boot camp living environment. Four hundred eighty-eight recruits completed the RJP program. Performance of this group was then compared with 231 recruits who experienced boot camp without the benefit of RJP. Initial training attrition for the experimental group was 10.4%. The control group experienced 15.6% attrition. Eight and ½ percent of the experimental group had one or more disciplinary actions following recruit training. The control group evinced a 13.1% rate of one or more disciplinary actions following recruit training.

The study provides extensive narrative description of the content of the experimental program and delivers sound rationale for the implementation of the program in order to reduce attrition. The study does not report why the experiment was not repeated or how the results were received by Navy leadership. The results from the limited trial use of the RJP on the small population appear to yield the desired effect of reducing attrition. Why the results of the experiment appear to have not been acted upon is not explained to the reader (Lakota, 1981).

Kubisiak additionally reported on training interventions correlated with reduced attrition. Effective RJP's allow individuals to construct realistic expectations for their performance during training and to have a better idea of the negative and positive aspects of the training. RJP's used during recruiting reduce the number of applicants; however, the applicants who continue with the process who have experienced an RJP are more

likely to remain within the training program. RJP's require a commitment of resources by an organization. RJP's require time and investment to prepare training material. Still, RJP's were assessed as a potentially solid return on investment. The Army and Marine Corps have also successfully integrated RJP's within both the recruiting process and training programs (Kubisiak et al., 2009).

Brose asks if RJP are relevant to military accessions and then proposes RJP as an intervention to reduce first-term Navy attrition. The research validates the use of RJP in both military and non-military settings to set the conditions for success of individuals transitioning into an organization. Brose acknowledges that application of RJP to target military attrition has been successful in some instances and negligible in other instances. Like curriculum development, RJP requires an initial investment of resources to conduct analysis, design, develop, implement, and evaluate the material. Brose ponders whether there is sufficient return on investment to justify this expenditure of resources.

As a data-driven organization, the Navy does not make hasty and intuitive decisions to commit resources to address attrition. The organization has assumed the best investment for reducing attrition is to fund additional work to improve predictive modeling used by recruiters to select the best candidates and, therefore, obviate the necessity for mitigation within the training organization. The limited resources that have been committed to attrition mitigation have been concentrated on improving predictive modeling. Consequently, the Navy has been hesitant to commit resources on potential qualitative mitigation strategies, such as RJP, despite the prevalence and success of RJP in other training venues.

Brose also appears to recognize that RJP for accession training runs counter to the military custom of creating a dramatic transition into the military for civilian volunteers. Brose offers that RJP provides an opportunity for services to ensure that civilian volunteers have a better appreciation of the challenges they face during accession training. In sustaining the military traditions of accession training, it cannot be forgotten that the instructional goals of accession training are primarily within the affective domain. What better way to build trust and confidence with inductees than by adequately and accurately preparing the inductees for the challenges of military indoctrination through RJP (Brose, 1999).

Strickland additionally proposes that at-risk Army enlistees spend additional and focused time within the delayed entry program (DEP) to prepare these individuals for the challenges of accession training. Individuals in the DEP have signed an enlistment contract and are awaiting a reporting date for military indoctrination training. The DEP is usually run by recruiting organizations and serves as a method for administratively, academically, and physically preparing applicants for accession training. While not designed as an RJP, the functions of DEP are closely aligned with RJP goals (Strickland, 2005).

Githens and Zalinski reported no statistical difference in attrition rates between experimental and control groups following a study of RJP at Marine Corps Recruit Depot. The experimental group was exposed to two films designed to assist recruits with adjusting to military indoctrination training and to cope with stress during training. Nonetheless, the study observed that attrition rates varied between platoons of recruits for

unknown reasons not associated with the RJP experimental or control groups. The study recommended against wide-spread implementation of RJP while recommending that additional effort be expended to determine why attrition rates varied between platoons. This work stands out as an exception to the literature reviewed, with regards to the effectiveness of RJP in reducing attrition and increasing retention (Githens & Zalinski, 1983).

Review of Research and Theory about Socialization

Mobley, Fisher, Shaw, and Woodman postulate that socialization efforts prior to and during recruit training will significantly reduce attrition and increase retention of recruits following initial training. The conceptual basis of their work is that individuals become full participants and committed members of an organization after learning values, norms, and required behaviors. While socialization is a continuous effort, socialization is especially crucial when individuals transition into an organization or when individuals shift roles within the organization.

Anticipatory socialization occurs prior to the transition. The period following enlistment and prior to arrival at initial training serves as an opportunity to prepare the prospective recruit for the mental, physical, and academic challenges of military orientation. Initial confrontation occurs after arrival at initial training. There are very few transitions as dramatic as the transition from civilian volunteer to military recruit. In most cases, the recruit is abruptly introduced to military discipline immediately after arrival at recruit training. During the initial confrontation phase, the recruit learns about individual and group performance expectations that must be met successfully to complete

training. This period requires individuals to make rapid adjustments in order to become a part of a larger team. These adjustments range from routine matters such as locating messing and berthing facilities to understanding complex and unfamiliar military nomenclature. Mobley, Fisher, Shaw, and Woodman further postulate that following the initial confrontation period, accommodation allows deeper understanding and commitment by the individual to the organization. The research update additionally delivered a process flow chart as a precursor for the socialization model for military recruits.

The research provides an update of a work in progress and provides an exceptionally strong rhetorical and intuitive justification for socialization. The work does not, however, provide data to support the conceptual basis of socialization. In the absence of a replicable research design and articulation of the validity, reliability and trustworthiness of the work, the effort is suspect and is easily dismissed. One is left to assume that the data will validate the concept. The lack of quantitative validation of the concept provides latitude for policy makers and recruits training organizations to reject the conceptual basis of socialization and to sustain initial military training without socialization (Mobley, Fisher, Shaw, & Woodman, 1981).

In 2009 Kubisiak, et al. reported on successful socialization efforts by all of the services during initial training. The programs provide assistance and mentoring during adjustment to military life and have been assessed as integral for reducing attrition. The common theme of these programs is to provide resources to the recruit during initial training that will cause the recruit to remain within the program, as opposed to electing to

leave training. These efforts are not intended as mental health interventions. Instead, the focus is on building and sustaining personal relationships (Kubisiak et al., 2009).

In 2008 Lucas, et al. conducted a longitudinal study of Sailors during their first tour of enlistment over a three-year period with a cohort of 39,000. The study administered five questionnaires at career milestones to assess attitudes and behaviors related to the Sailors' experience during training and following training while serving in the fleet. The feedback from the survey revealed insights into the Sailors' perceptions with regards to social support and social undermining in relation to attrition or retention behavior.

Lucas, et al. validated the connection between social support and organizational attrition. For the period of military indoctrination at Recruit Training Command (RTC), Sailors, with reported social support from family and from their Recruit Division Commanders (RDC, military indoctrination instructors), experienced lower attrition than did their counterparts who did not report having a similar social support network. Social support from friends not in the military and from other recruits at RTC was correlated with a greater likelihood of attrition from RTC. The survey further reported a high incidence of social undermining by fellow recruits. Additionally, perceived undermining by RDCs, family, and friends were all associated with a greater likelihood of attrition.

The implications for RTC are that attrition might be reduced if the RTC training syllabus encouraged RDCs to build rapport and relationships with recruits while not undermining their positions of authority as instructors during military indoctrination training. This is much easier said than done. The balance between sustaining authority

during military indoctrination training and developing a strong social support bond with recruits is an obvious challenge. RTC will need assistance determining how to generate perceived and real social support of recruits without demilitarizing the role of the RDC.

The discussion on perceived and real social undermining was insightful. One would assume that recruits rely on one another during military indoctrination training to complete the ordeal. The predictive ability of social undermining with regards to attrition creates additional opportunities for RTC to modify the military indoctrination process. While team building exercises are inherent during military training, the implications point to the necessity of adding exercises targeted on building trust and confidence in one another, as well as the RDCs, in order to reduce attrition (Lucas, Whitestone, Segal, & Segal, 2008).

Strickland additionally proposes targeted training for Army supervisors to assist enlistees with adjustment to the military. The training identified is closely aligned with socialization efforts that are designed to allow individuals undergoing military indoctrination to more closely identify with their instructors during accession training. As with the discussion on Navy RDCs, the challenge is to ensure Army instructors gain an understanding on how best to assist the recruit with the transition into the military without compromising or diluting the positional authority of the instructor. While Strickland and others have identified the potential benefits of increased socialization, the nuanced application of this intervention remains a work in progress for many accession trainers (Strickland, 2005).

Review of Research and Theory about Leadership Policy and Practices

Goodstadt's (1980) research proposal is a unique example of an attempt to assess the effect of command leadership policy and practices on attrition and retention.

Consequently, the proposed study intends to determine if attrition can be predicted based on quantitative and qualitative assessment of unit disciplinary decision-making practices in the Marine Corps. The conceptualization of this approach to attrition is derived from a realization that the existing research contains gaps in understanding how the chain of command influences attrition and retention.

Goodstadt's preliminary findings indicate that leaders play a significant role in attrition rates within their units. Additionally, a 30% variance in attrition rates between units can be attributed to unit-specific practices. A tertiary finding indicates that unit leadership philosophy and beliefs are related to unit attrition rates. Simply put, Goodstadt is proposing that individual leaders can, and do, influence attrition rates of their unit. The implication is that leadership policies and practices can be shaped in order to influence attrition or retention behaviors. Goodstadt reminds the reader that attrition is not always imposed on an organization but frequently caused by the organization. Follow-on research was planned to conduct experimental studies to further assess the influence of leadership policy and practices on attrition (Goodstadt, 1981).

Kubisiak, et al. contend that leaders should consider attrition a negative occurrence and that each leader should develop individual policies and practices that reduce attrition. Two Army initiatives are highlighted as examples of efforts to reduce, through local intervention by training and command leadership. Acceptance,

Understanding, Recognition, and Appreciation (AURA) posits that a recruit is at less risk of attrition when the individual feels that he or she is significant and valued.

Consequently, the program is focused on making the recruit feel accepted, understood, recognized, and appreciated by the training staff. To reduce attrition, workshops for drill sergeants are designed to facilitate sharing of best practices and lessons learned in order to generate interventions during initial training. Both Army interventions could not have succeeded without leadership sponsorship and encouragement. The two initiatives are specific examples of leadership interventions that resulted in reduced attrition (Kubisiak et al., 2009).

Strickland suggests that deliberate leadership action to implement remedial programs designed to address personal environmental fit (values, interests, and expectations), physical fitness, medical history, and homesickness have the potential to reduce attrition. Taking the initiative to implement intervention in these areas requires strong leadership and insight into the potential for reducing attrition. Further, a commitment to these instructional interventions requires leadership to assess attrition as a negative consequence of the existing policies and procedures as opposed to the desired effect of weeding out individuals during accession training who were not properly screened during the recruiting process (Strickland, 2005).

Review of Research and Theory about Intelligence and Learning (Capacity) as Applied to Leadership

In a 2012 Cardinal Stritch University Summer Institute lecture, Frontier linked effort and intelligence to leadership. Frontier introduced the doctoral student to the

works of Dweck, Rotter, Schon and other theorists. His discussion of individual and organizational capacity required to grow and achieve applied four frames of reference for thinking about and then improving performance; Dweck's fixed and growth mindsets; Rotter's internal from and external locus of control; Schon's performance versus learning environments; expertise and reflective practice (Frontier, 2012).

Frontier postulates that the perspective of a fixed mindset is evident when individuals and organizations believe that talent and skills are innate and capacity is limited. Performance cannot be improved and the status quo defines the limits of success. Challenges are avoided, obstacles are avoided, any task requiring a high level of effort is viewed as an opportunity to fail and feedback of any kind is viewed as affirmation of one's lack of ability. A growth mindset believes that individuals and organizations have capacity to excel. Challenge is viewed as an opportunity. Skills can be developed to overcome obstacles. Tasks requiring a high degree of effort are valued. Feedback focuses attention on areas that require further development and practice.

Internal and external locus of control is determined by the factors on which success or struggles are attributed. As implied in the descriptions, an external locus of control views tasks views success or failure as the result of others. Internal locus of control views success or failure as the result of one's own effort. Taken to the extreme, an external locus of control can cause individuals and organization to develop a victim mentality. Individuals with an internal locus of control take accountability and responsibility for their success and failures.

The culture and norms of a performance organization place an emphasis on outcomes at the expense of missing opportunities to learn and grow. Learning organizations value developing skills and strategies for sustained growth as a methodology for success. Performance organizations are short term focused. Learning organizations are longer term focused.

Expertise is developed through practice and a focus on attainment of specific goals. A reflective practice builds upon expertise while providing additional context on current and future conditions that may require refinement of existing expertise or development of expertise in new areas (Frontier, 2012).

Frontier also provides three principles for how people learn; Engage prior understandings; the essential role of factual knowledge and conceptual frameworks; the importance of self-monitoring. The first principle relates to the fact that new understandings are constructed on a foundation of existing understandings and experiences. The second principle relates to the importance of the knowledge of facts and important organizing ideas are mutually supportive. The third principle states that learners need to be taught that an internal dialogue to address ambiguity and confusion is to be embraced in order to reflect on and process what is being learned (Frontier, 2012).

Frontier additionally explores three ways to learn: 1) experience, 2) be told, and 3) watch. Experiential learning involves doing by learner either through direct or indirect experiences. Hearing and seeing are more passive but important methodologies to deliver instruction and training. All learning involves at least one of these techniques. Effective learning in most cases involves all three ways (Frontier, 2012).

Finally, Frontier introduced Knowles' the concept of andragogy, or teaching adults. Andragogy may be contrasted to pedagogy, teaching children. It is widely accepted that adults and children learn differently and have different instructional needs and requirements. Andragogy honors adults as self-directed learners who desire a climate of mutual respect and trust when they are under instruction. Facilitation of adult learning involves the opportunity for the learners to diagnose gaps in existing knowledge or skills and to identify opportunities to close these gaps. Adults appreciate the opportunity to define their own instructional goals that are defined by fully articulated performance criteria (Frontier, 2012).

Mindful Leadership

Dickmann and Stanford-Blair suggest that leaders will act (lead) based on acquisition of new knowledge about how individuals learn and achieve. Their proposal is that leaders are disposed to act based on perceptions of what is important. Conceptualizing how individuals learn is an essential mechanism for changing how leaders perform in order to harness the capacity of followers.

Dickmann and Stanford-Blair define leadership as the process of influencing others towards the achievement of a goal. The three components of leadership are: 1) influence, 2) capacity, and 3) the goal. Influence is the action taken by a leader to spur performance of followers. The capacity or intelligence of the leader and follower is the component that enables acquisition and application of the knowledge necessary to perform. The goal is the outcome for which the effort the expended. In simple terms, capacity or intelligence is bridging knowledge and capacity to accomplish mindful

leadership action. Dickmann and Stanford-Blair discuss six dimensions or qualities of intelligence; physiological, social, emotional, constructive, reflective, and dispositional.

The physiological dimension relates to an understanding of the physical demands of the human brain. Mindful leadership appreciates that a human brain functions best with adequate rest and proper nutrition. An individual with inadequate rest and improper nutrition has reduced capacity for learning. Additionally, the mindful leader understands that the brain's neural networks are modified by experience. This plasticity is sustained throughout life. The capacity to acquire and apply information and knowledge is not fixed and is malleable.

The social dimension is the brain's instinctual platform that supports memory, language, empathy, sympathy, collaboration and reasoning. The brain is predisposed to learn with and communicate with others and thrives when stimulated by direct or indirect social stimulation. The brain naturally seeks ways and expects to connect with other brains when dealing with positive or negative challenges. The social experience is integral to optimizing the brain's functionality.

The emotional dimension drives attention, judgment, motivation and reasoned oversight of the mind-body experience. Both glandular and neural responses to stimuli are governed through the emotional dimension. Mindful leaders will recognize that joy, surprise, fear, anger, sorrow and disgust are emotional responses that can either enable or impede learning.

Dickmann and Stanford-Blair (2012) repeatedly describe the brain as lean, mean pattern-making machine in order to articulate the constructive dimension of intelligence.

The brain's ability to find and create order when presented with the chaos of new information or experiences is the dimension which construct meaning and memory from new information. Once formed, the brain is able to reconstruct and then modify the organization of data to adapt to new situations.

Reflective capacity is the ability to manipulate information, consider options related to the information, and the consequences associated with the options. The ability to ruminate before acting when presented with new information or an experience is what provides the means to manage risk from impulsive actions and to optimize decisions.

Dispositional capacity is the quality of intelligence which translates into habits, tendencies, inclinations, attitudes, personality, character, and temperament. The brain is disposed to exercise its intelligence in a manner that is macro in that it is applied on a broad scale, mandatory in that habits of thinking are not optional and malleable in that quality options are always considered. Dispositional intelligence is either productively maximizing capacity or detrimentally minimizing capacity.

Dickmann and Stanford-Blair additionally emphasize that intelligence is a function of integrating the six dimensions as opposed to any one dimension. The mindful leader leverages a combination of all of the dimensions to ensure that followers acquire knowledge, skills and abilities to achieve a goal (Dickmann and Stanford-Blair, 2009).

Outliers

In observing and assessing the success of individuals who are often considered outliers due to their exceptional success or performance as compared to general population, Gladwell offers that the predictable path to increasing capacity in others and

opening opportunities to larger population are; opportunity to practice, demographic luck and doing meaningful work. Gladwell emphasizes success is not the brightest who succeed, nor are outcomes always the sum of decisions or effort made but instead the practice of seizing and making the most of the opportunities presented.

Summary of Findings and Themes within Reviewed Literature

The above review of literature represents the framework related to the research questions addressed by the study. This final chapter section summarizes prominent themes and findings within the framework. This summarization will serve as a base for comparison of study findings to relevant literature in Chapter Five.

Summary of Themes/Findings about Predictive Models for Attrition

The dominant theme of the existing research is that attrition, prior to training, can be managed through development and refinement of predictive models used for selection and placement. The models are used to screen candidates for mental, moral, physical, and academic traits or weaknesses that are assumed to lead to attrition. The premise of this approach is that prescreening of candidates provides the best qualified candidates to the training organization.

Finstuen and Barry's seminal work validates the foundational aspects of predictive models to correlate demographic characteristics such as, age, gender, racial, ethnicity, education, and aptitude test scores with success within the military. Multivariable analysis is continuously conducted to refine and improve predictive models. Nonetheless, years of education combined with aptitude test scores remains the most accurate predictor of success during military orientation training. The discussion

within the literature was focused on enlisted accession screening with consideration of whether or not an individual had graduated from high school as the significant factor in predicting attrition.

Physical, medical, and drug screening additionally are considered significant factors in predicting success during military indoctrination training. The population of individuals who qualify for volunteer service in the military continues to decrease. Applicant physical fitness remains a serious concern for recruiters.

The available literature on predictive modeling views this effort in isolation from other factors that may reduce attrition. The emphasis on predictive models appears to diminish consideration of other factors in addressing attrition. Nonetheless, one cannot understate the importance of initial screening of candidates for military service. Predictive models based on years of education completed and aptitude test scores have been validated time and time again as best predictors of success during military indoctrination training and during an enlistment.

No doubt, prescreening of candidates to assess qualifications for training is essential. However, screening candidates is the just the first step in the training and development process. Heavy reliance on predictive models for recruiters creates the expectation that predictive models are the alpha and the omega of the process to reduce attrition.

The training organization cannot simply rely on predictive models in screening to determine who succeeds and who fails a training course. The training command retains responsibility for developing the individuals who are screened as qualified. The training

command cannot point back to inadequate or flawed screening procedures to account for attrition. The training command should assume responsibility for the success of the students under the premise that all students are minimally qualified, based on the screening. The responsibility for completion or attrition from the course rests with the training command.

Summary of Themes/Findings about Realistic Job Previews

Holmen and Katter's research on Realistic Job Previews (RJP) provides evidence that success during a training program and subsequent performance on the job following the training is increased by preparing the students before training with realistic information on the training program and job. The premise of RJP is that individuals who are prepared for mental, moral, physical, and academic challenges of a training program are more successful during the training program than are individuals who did not receive realistic training or indoctrination prior to the training. RJP provided context for the rigors of training and allowed the students to understand the rationale for training events. Additionally, RJP allowed students to generate realistic expectations for their training performance during grueling, and at times, seemingly unrelated training events.

Individuals without RJP were less prepared for actual training events and less able to place training events in context with actual post-training job performance. In the absence of RJP, more students created unrealistic expectations for their performance during training. Without RJP, students were less able to connect a training event with larger training program goals and eventual post-training job performance.

RJP are consistent with the methodology used to conduct military training and operations subsequent to initial training. Service members rarely conduct an operation without first having some context for the event and exposure on how the event should be completed. This approach applies to routine events such as preventative maintenance as well as to more high risk events such as firing a weapon or jumping out of an airplane. Nonetheless, there appears to be institutional resistance to applying this approach to accession training. This resistance appears to be rooted in the tradition of making the transition from civilian to military life a dramatic and noteworthy event. The apparent fear is that RJP would eliminate the shock and awe of accession training and make the transition into the military too easy. Lost in this discussion is that RJP has the potential to provide context and meaning to military indoctrination training. In the absence of this context and meaning, many self-select themselves for voluntary or involuntary attrition.

Summary of Themes/Findings about Socialization

Mobley, Fisher, Shaw and Woodman demonstrated that the socialization process during initial training increases the students' commitment to complete the training program. Socialization involves interactions among students and interaction between students and instructors. Not surprisingly, students who build trust and confidence with instructors attrite at lower rates than students who do not build trust and confidence with their instructors. Surprisingly, socialization among students has less influence on attrition rates.

Socialization appears to be a more nuanced term that describes the methodology of providing recruits with additional context and meaning in their military indoctrination

experience. Receiving encouragement from colleagues and instructors during a challenging course of instruction appears to have the potential to reduce attrition from accession training. Socialization has the potential to reduce the tendency of recruits and instructors alike to view military indoctrination training simplistically as survival of the fittest. Socialization offers the opportunity to provide the recruit with formal and informal resources that, collectively, may prevent attrition.

Summary of Themes/Findings about Leadership Policy and Practices

Goodstadt's research demonstrated that deliberate leadership policies and practices designed to address attrition are effective in reducing attrition. Training organizations which discourage attrition actually have lower attrition rates. While this may seem obvious, the literature indicates that a large proportion of training organizations are neutral with regards to training policy and practices. The perception is that these organizations deliver the course of instruction and are willing to accept attrition rates that naturally occur. Alternatively, other organizations design and implement policy and practices aimed at increasing success rates and lowering attrition. Leadership of military indoctrination organizations can and should avail themselves to research-based interventions that have the potential to reduce attrition and optimize the use of training resources. The abundance of research related to predictive modeling and the limited research on leadership practices and policies indicates that this area merits further examination.

Relevance of the Literature Review to the Research on OCS Attrition

Leadership engagement at OTC, and by NSTC and NRC staffs, incorporates many of the themes discussed within the literature review. The foundation for reducing attrition at OCS remains intensive screening of candidates based on their years of education and aptitude test scores. Nevertheless, additional leadership engagement that addresses accession training attrition acknowledges that attrition is not solely a function of better predictive modeling for screening and selecting candidates. Local actions initiated at OTC have provided RJP and socialization opportunities for OCs after arrival at OTC. Staff coordination by NSTC and NRC has generated RJP for recruiters in the field through consistent feedback on the performance of previous OCs. This feedback has resulted in better screening and preparation of candidates before shipping these individuals to OTC.

CHAPTER THREE: RESEARCH DESIGN

Research Rationale

Research Purpose

The purpose of this study was to measure the effect of leadership engagement to address Officer Candidate School attrition. The research question: What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

Research Approach

The research approach employed was a quantitative descriptive analysis of Officer Candidate School attrition employing a case study methodology. A case study is an intensive analysis of a specific individual, group, process or event which stresses the analysis within context. The specifics of the individual case that is studied and the context of the events provide the researcher with the opportunity to develop a prism through which other phenomena may be observed and analyzed.

Case study is appropriate in three situations; 1) a key case, 2) outlier cases, and 3) cases where the researcher has local knowledge. Key cases exist when there is an inherent interest in the case and the circumstances surrounding the case. Outlier cases offer situations that are extreme or atypical. Local knowledge cases are evident when the researcher has unusual access to and information concerning a situation (Leedy & Ormrod, 2009, p. 137). Officer Training Command leadership intervention to mitigate attrition trends is assessed as fitting the criteria of a key, outlier and local knowledge

case. The Navy recruiting, training, development and distribution supply chain has an inherent interest in reducing attrition as a cost of doing business. The unusual circumstances that combined in 2010 to cause leadership intervention to specifically address Officer Candidate attrition were atypical. The researcher's position as Naval Service Training Command Director of Operations, Analysis and Requirements provides unlimited access to accession training attrition data and correspondence between training and recruiting leadership (Zin, 2009).

A case study involves an in-depth and longitudinal examination of a single instance or event as opposed to analysis of a sample of data drawn from a larger population. The goal of a case study is to understand why an event occurred when it occurred and what could be generalized from the specific case studied.

This quantitative approach was assessed as appropriate given the purpose of the study was to describe, interpret, verify and evaluate the processes used by the Commanding Officer of Officer Training Command and the Naval Service Training Command – Navy Recruiting Command staffs to address Officer Candidate attrition. The case study research design provided the template to conduct an in-depth study of Officer Candidate School attrition during FY 10-12. The case study methodology is suitable for learning more about the implications of command and staff influence in this specific situation. The lessons learned from this specific situation will be used to determine if attrition mitigation is possible only through improved predictive modeling or whether improved predictive modeling in combination with realistic job previews, socialization and policy influence attrition rates. More specifically, the intent was to

assess and highlight the command and staff intervention influences on attrition rates and to consider whether the circumstances and interventions at Officer Candidate School can or should be replicated at other accession training under the command of Naval Service Training Command; Recruit Training Command and Navy Reserve Officer Training Corps units.

Nature of the Research Design

The research design involved the collection and analysis of archival data that are routinely collected as part of Navy Recruiting Command and Officer Training Command production. Navy Recruiting Command collects an exhaustive amount of data on Officer Candidate School applicants in order to assess the quality of candidates. Navy Recruiting Command data were examined to compare the populations of candidates attending Officer Candidate School FY10 – 12. The data reviewed and compared focused on officer aptitude rating and undergraduate grade point average. These two categories of data best differentiate the quality of the candidates. After arriving at Officer Candidate School, candidate information is routinely entered in the Corporate enterprise Training Administration Resource System (CeTARS) by Officer Training Command. The data entered includes candidate start date, completion or graduation date and, if applicable, the day of training of attrition by the candidate as well as the reason for attrition.

The research design employed was to first assess Officer Candidate School attrition trends since 1995. The purpose of this assessment was to derive the historical mean annual attrition rates before determining if FY10, FY11 and FY12 attrition rates are statistically significant from historical annual attrition rates. In order to determine

historical attrition rates, CeTARS was queried to produce annual attrition for each available year. The mean attrition for these years was calculated and a distribution of annual attrition rates was constructed.

Once calculated, the mean historical attrition and the standard deviation were used to determine if FY10-12 attrition rates were statistically significant. Attrition rates within three standard deviations of the historical mean attrition rate were assessed as statistically insignificant. Attrition rates outside of three standard deviations from the historical mean attrition rate (outliers) were assessed as statistically significant. The purpose of these calculations was to determine if the Commanding Officer and staff intervention at Officer Candidate School resulted in statistically significant attrition rates in FY11 and 12.

Attrition rates for these populations were then compared to determine if the attrition rate in FY10 are significantly different from the attrition rates in FY11 and FY12. The starting assumptions were that the populations have small variance and were comparable. Variability of annual attrition rates was determined through deriving the standard deviation for the annual attrition rates. Variance is the square root of the derived standard deviation. A small standard deviation indicates that the annual attrition rates are close to the mean and indicates low variability. A large standard deviation indicates greater variability for annual attrition rates.

The research design next compared the population of Officer Candidates attending in FY10 with the population attending in FY11 and FY12. The intent of this comparison was to determine the variability of the two populations. Analysis of variance was used to compare the mean Navy Recruiting Command data on officer aptitude rating

(OAR) and undergraduate grade point average (GPA) of these two year groups in order to compare the quality of these populations. While OAR is derived from a standardized Navy-administered test, GPA is assessed independent of academic major and the quality of institution of higher learning. Attrition rates for these two populations were then compared to determine if the attrition rate in FY10 varied from the attrition rates in FY11 and FY12. The starting assumptions were that the populations have small variance and were comparable. Given comparable populations, the assumption was that attrition rates would be similar for FY10-12. If attrition rates vary between the years, the difference may be attributable to the leadership intervention by the Commanding Officer for Officer Training Command, Naval Service Training Command and Navy Recruiting Command staff coordination and feedback initiated in FY11.

Recruit Training Command attrition rates were compared with Officer Candidate School attrition. As with Officer Candidate School, Recruit Training Command data resides with CeTARS. The purpose was to compare attrition rates for both accession programs over an extended period and then compare 2010-2012 attrition rates. The purpose of the comparison was to assess whether the expected decrease in Officer Candidate School attrition which resulted from leadership intervention and mitigation was also seen at Recruit Training Command where leadership did not intervene nor deliver mitigation to decrease 2010-2012. Application of predictive modeling for screening and selection of enlisted applicants remain the primary means of attrition mitigation at Recruit Training Command.

Finally, the research design assessed drop on request attrition trends to assess the frequency of incidents of drop on request for FY 10 and FY 11. CeTARS was queried to report the day of training for attrition of candidates dropping on request. The assumption was that the longer a candidate remains in training, the less likely it is for a candidate to attrite. The premise was that preparation of the candidates by the Navy Recruiting Districts prior to shipping to Officer Candidate School equips the candidate to better cope with the immediate transition to military life experienced during the indoctrination phase. Additionally, the policy changes made at Officer Candidate School with regards to how candidates are treated and how the school staff views their role in training-in versus weeding-out candidates may contribute to candidates successfully completing the indoctrination phase.

Appropriateness of the Methodology to the Research

The in-depth case study of the potential influences of command and staff intervention on attrition rates at Officer Candidate School may offer opportunities to apply similar intervention at other accession training commands. Officer Candidate School offers the researcher a large and consistent annual sample size with assumed similar populations who are experiencing similar circumstances under similar conditions and similar objective metrics. The results of the research should inform Navy leadership on the benefits or consequences of command and staff intervention to address a chronic production issue. Navy Recruiting Command data on candidate quality and Officer Candidate School attrition data is routinely collected as part of the routine production cycle and not interfere with ongoing recruiting and training.

Research Plan

Site, Sample Selection, and Description of Site

Officer Candidate School is a 12 week course of instruction held at Officer Training Command in Newport, Rhode Island. The 12-week curriculum is divided into sequential trimesters; indoctrination, academics, and leadership. Officer Training Command is a subordinate command of Naval Service Training Command located in Great Lakes, IL. Naval Service Training Command is able to obtain Navy Recruiting Command data by request and to remotely access CeTARS data. Routine communication was maintained via electronic mail (e-mail) and telephone with the training command and staff leadership.

The entire Officer Candidate School student population for FY10 and FY11-12 was selected for analysis. Students are referred to as Officer Candidates. The majority of candidates were prospective Navy unrestricted line officers who will enter surface, sub-surface, and aviation warfare training following graduation and commissioning. Officer Candidates who were not destined for an unrestricted line community were restricted (specialized) or staff corps officer communities.

Direct communication with the sample population was not accomplished. Data used to compare FY 10 and FY11-12 OCS populations and data used to compare attrition for these populations will be derived from Navy Recruiting Command and CeTARS databases. CeTARS is the primary and centralized database for all Navy training commands. CeTARS functionality includes the ability to track start, completion and attrition of students by course. Attrition was computed using the cohort method (tracks

starts/graduations by class) as opposed to the student flow method (in/outs or starts/graduations). Attrition was coded by categories of reasons entered by the training command. The primary reasons for attrition are drop on request inability to meet academic or physical standards and not physically qualified.

Data Collection

Within the case study research methodology, this study retrieved archival data to generate data relevant to the research question. Navy Recruiting Command and CeTARS was the source of the data. The FY10-12 data were organized to support the analysis described previously; annual attrition rates, candidate quality and day of training attrition. Navy Recruiting Command data on officer aptitude rating and undergraduate grade point average were compared for FY10-12 officer candidates. CeTARS queries were constructed to derive historical annual attrition rates since 1995. CeTARS was also used to derive FY10-12 the day of training for occurrences of attrition by drops on request. Navy Recruiting Command data are routinely used to assess candidate quality. CeTARS is the database of record for Officer Candidate School production. CeTARS data objectively records and reports attrition data.

The following data and the source of the data is as follows:

1. Officer Candidate School (OCS) annual attrition rates: CeTARS
2. OCS applicant undergraduate grade point averages and Officer Aptitude Rating test scores: Navy Recruiting Command
3. Recruit Training Command annual attrition rates: CeTARS
4. Day of training for OCS incidents of drop on request: CeTARS.

Development of reliable/valid/trustworthy materials/instrument(s)

Data reliability refers to the consistency of the data. High reliability requires that the data provides consistent results under consistent conditions. There are several general classes of reliability; inter-rater, test-retest, inter-method and internal.

Inter-rater reliability assesses the degree to which test scores are consistent when measurements are taken by different people using the same methods. Test-retest reliability assesses the degree to which test scores are consistent from one test administration to the next. Measurements are gathered from a single rater who uses the same methods or instruments and the same testing conditions. This includes intra-rater reliability. Inter-method reliability assesses the degree to which test scores are consistent when there is a variation in the methods or instruments used. This allows inter-rater reliability to be ruled out. Internal reliability assesses the consistency of results across items within a test. All general classes of reliability will be assured through multiple CeTARS queries by various Naval Service Training Command staff and different times. The multiple queries were compared to assess reliability of the attrition data that was produced (Leedy, 2009, p. 93).

The validity of a measurement tool is considered to be the degree to which the tool measures what it claims to measure. Two general categories of validity apply; external and internal. Internal validity is an estimate of the degree to which conclusions about causal relationships can be made based on the data assessed. In this case, the influence of Officer Training Command leadership intervention on attrition trends was assessed based on historical and current Officer Candidate School attrition data. In this

case study methodology, consideration was given to the effect of other potential influences on Officer Candidate School attrition (Leedy, 2009, pp. 97-99).

External validity concerns the extent to which results of the study can be held true in other cases. In this case, the intent was to assess the effect of Officer Training Command leadership mitigation and intervention on Officer Candidate School attrition. Further, the goal is to determine if similar mitigation and intervention in other accession training programs can expect to deliver similar results (Leedy, 2009, pp. 97-99).

Four forms of validity were applicable to this research; face, content, criterion and construct. Face validity is the extent to which the instrument or modality measures what it claims to measure. In this case, to what extent did a CeTARS data query on attrition produce data needed to assess attrition trends.

Content validity refers to the extent to which the data reported measures a representative sample of the activity to be assessed. In this case, the entire population of Officer Candidates for FY10 – 12 was sampled.

Criterion validity refers to a correlation between a test and other measures held to valid. Officer Candidate outcomes of completing or not completing Officer Candidate School were assessed to determine the validity of attrition data queries.

Construct validity is the degree to which an instrument measures what cannot be directly observed and that conclusions drawn from the data are correct and reasonable. Attrition data are expected to objectively report trends which will point to valid conclusion with regards to the effect of Officer Training Command leadership intervention on Officer Candidate School attrition trends (Leedy, 2009, p. 92).

CeTARS data on Officer Candidate School attrition is validated monthly as part of recurring production reporting cycle by at least three independent sources. The first validation occurs at Officer Training Command in Newport, Rhode Island. The Commanding Officer reviews the initial CeTARS data queries conducted by local training administrators and then reconciles the CeTARS data with local training records. The CeTARS data should mirror the data held locally with respect to number of Officer Candidates who started training with an Officer Candidate School class, the number of Officer Candidates still under instruction if the class is still on board and then ultimately the number of graduates from the class. Additionally, Officer Training Command reconciles information reported from CeTARS with respect to the coding of the reason for attrition with local training records and the exit interview forms that are compiled for each Officer Candidate who does not complete training.

The second validation of CeTARS data occurs at Naval Service Training Command. Aggregated attrition for each Officer Candidate School class is calculated using CeTARS data. The status of all classes for the year is recalculated to ensure that all Officer Candidates are accounted for by-name. CeTARS tracks and reports student status; started instruction, attrition (with date of attrition and reason code), completion or interrupted training (with date of interrupted training and reason for interruption such as injury or illness).

Finally, Naval Education Training Command reviews the monthly attrition report to ensure consistency of reporting for the fiscal year as well month-to-month reporting trends. Anomalies with data or differences in reporting methodology are identified by

staff and corrective action is taken by Naval Service Training Command or Officer Training Command. This final validation is conducted in preparation for a series of monthly production briefings to Commander Naval Education Training Command and the Chief of Naval Personnel.

Triangulation of data involves double checking data from multiple data sources. In this case, CeTARS is the sole source of official Navy record of attrition data. Triangulation of Officer Candidate School attrition data occurs through the validation process described earlier in this chapter. Multiple independent CeTARS queries by Officer Training Command, Naval Service Training Command and Naval Education Training Command staff members occur monthly along with reconciliation of CeTARS data with local training records to ensure that attrition is accurately captured and reported. Additionally, Naval Recruiting Command receives detailed exit interview information of Officer Candidates who do not complete training. While the purpose of this feedback loop is to ensure that the Recruiters are preparing the Officer Candidates adequately for training, the feedback loop serves to triangulate attrition reporting and acts as an independent review and validation of Officer Candidate School data reporting.

CeTARS is the sole source record for Navy training. Chief of Naval Operations Instruction (OPNAV) 1510.10B states that entry of individual training information for formal Navy course of instruction is mandatory and accurate, timely data entry is essential for maintaining training records and fleet readiness. On March 10, 2010, a Naval Audit Service Report N2010-0014 stated to the Commander, Naval Education Training Command reported that the trustworthiness of CeTARS data was validated as

99% accurate. Navy Recruiting Command data are routinely used to assess candidate quality. CeTARS is the database of record for Officer Candidate School production. CeTARS data objectively records and reports attrition data. Officer Training Command is responsible for CeTARS data entry as part of the production cycle. Naval Service Training Command is responsible for oversight and aggregating Officer Training Command data.

Procedure

Data were organized and categorized in order to facilitate interpretation, identification of patterns and promote synthesis of findings or generalizations. Navy Recruiting Command provided officer aptitude ratings and grade point averages for FY10-12 candidates. CeTARS queries were made from Naval Service Training Command at Great Lakes, IL. The data derived were available remotely on work stations and was printed as required during data analysis. The data was transferred into Excel to support quantitative analysis. Charts and graphs were created using Excel to display the data and accompanying analysis.

Data Analysis

Analysis was conducted on archival data that are routinely collected as part of Navy Recruiting Command and Officer Training Command production. Navy Recruiting Command data was examined to compare the populations of candidates attending Officer Candidate School FY10 – 12. The data reviewed and compared focused on officer aptitude rating and undergraduate grade point average. These two categories of data best differentiate the quality of the candidates. After arriving at Officer Candidate School,

candidate information is routinely entered in the Corporate enterprise Training Administration Resource System (CeTARS) by Officer Training Command. The data entered includes candidate start date, completion or graduation date and, if applicable, the day of training of attrition by the candidate as well as the reason for attrition.

The methodology employed was to first assess Officer Candidate School attrition trends since 1995. The purpose of this assessment was to derive the historical mean annual attrition rates before determining if FY10, FY11 and FY12 attrition rates are statistically significant from historical annual attrition rates. In order to determine historical attrition rates, CeTARS was queried to produce annual attrition for each available year. The mean attrition for these years was calculated and a distribution of annual attrition rates constructed.

Once calculated, the mean historical attrition and the standard deviation were used to determine if FY10-12 attrition rates were statistically significant. Attrition rates within three standard deviations of the historical mean attrition rate were assessed. Attrition rates outside of three standard deviations from the historical mean attrition rate (outliers) were assessed as statistically significant. The purpose of these calculations was to determine if the Commanding Officer and staff intervention at Officer Candidate School resulted in statistically significant attrition rates in FY 11 and 12.

Attrition rates for these populations were then compared using Analysis of Variance (ANOVA) to determine if the attrition rate in FY10 varied from the attrition rates in FY11 and FY12. The starting assumption was that the populations have small variance and are comparable. Analysis of variance of annual attrition rates was

conducted using the Tukey method of grouping means. The Tukey test was used in conjunction with ANOVA find means that significantly different from one another. Using the Tukey test, CeTARS data were subject to multiple comparisons. The result was grouping. Means that are not grouped together are significantly different.

Variance is the square root of the derived standard deviation. A small standard deviation indicates that the annual attrition rates are close to the mean and indicates low variability. A large standard deviation indicates greater variability for annual attrition rates.

The methodology next compared the population of Officer Candidates attending in FY10 with the population attending in FY11 and FY12. The intent of this comparison was to determine the variability of the two populations. Analysis of variance was used to compare the mean Navy Recruiting Command data on officer aptitude rating and undergraduate grade point average of these two year groups in order to compare the quality of these populations. Attrition rates for these two populations was then compared to determine if the attrition rate in FY10 varied from the attrition rates in FY11 and FY12. The starting assumptions were that the populations have small variance and were comparable. Given comparable populations, the assumptions were that attrition rates will be similar for FY10-12. If attrition rates vary between the years, the difference may be attributable to the leadership intervention by the Commanding Officer for Officer Training Command, Naval Service Training Command and Navy Recruiting Command staff coordination and feedback initiated in FY11.

Recruit Training Command attrition rates were compared with Officer Candidate School attrition. As with Officer Candidate School, Recruit Training Command data resides with CeTARS. The purpose was to compare attrition rates for both accession programs over an extended period and then compare 2010-2012 attrition rates. The purpose of the comparison was to assess whether the expected decrease in Officer Candidate School attrition which resulted from leadership intervention and mitigation was also seen at Recruit Training Command where leadership did not intervene nor deliver mitigation to decrease 2010-2012. Application of predictive modeling for screening and selection of enlisted applicants remains the primary means of attrition mitigation at Recruit Training Command.

Finally, the research assessed drop on request attrition trends to assess variability between FY 10 and FY 11/12 frequency of drops on request. CeTARS was queried for the quantity of attrition of candidates dropping on request. The assumption was that candidates prepared for training and provided with the opportunity to be trained-in as opposed to weeded out will be less likely drop on request. The premise was that preparation of the candidates by the Navy Recruiting Districts prior to shipping to Officer Candidate School equips the candidate to better cope with the immediate transition to military life experienced during the indoctrination phase. Additionally, the policy changes made at Officer Candidate School with regards to how candidates are treated and how the school staff views their role in training-in versus weeding-out candidates may contribute to candidates successfully completing the indoctrination phase. Small variance between drop on request attrition rates indicate that little difference FY10 and

FY 11/12 day of training attrition. Larger variance indicate a difference that may be related to command and staff intervention.

Nature of Quantitative Analysis

The data were organized to according to fiscal year in order to derive historical attrition rates. Mean and standard deviation of annual Officer Candidate School attrition were derived to determine if FY11-12 attrition rates are significantly different from historical attrition rates. Candidate quality for FY10-12 was compared to determine variance of the candidates attending Officer Candidate School during these tears. Day of training incidents of drop on request for FY10-12 was compared.

Validity/Trustworthiness/Triangulation

Quantitative analysis of Navy Recruiting Command and CeTARS data are routine and applicable to assess the effectiveness of Officer Training Command production. Validity, trustworthiness, and triangulation of data are attained through double checking data from multiple data sources. In this case, CeTARS is the sole source of official Navy record of attrition data. Triangulation of Officer Candidate School attrition data occurs through the validation process described earlier in this chapter. Multiple independent CeTARS queries by Officer Training Command, Naval Service Training Command and Naval Education Training Command staff members occur monthly along with reconciliation of CeTARS data with local training records to ensure that attrition is accurately captured and reported. Additionally, Naval Recruiting Command receives detailed exist interview information of Officer Candidates who do not complete training. While the purpose of this feedback loop is to ensure that the Recruiters are preparing the

Officer Candidates adequately for training, the feedback loop serves to triangulate attrition reporting and acts as an independent review and validation of Officer Candidate School data reporting.

CeTARS is the sole source and source of record for Navy training. Chief of Naval Operations Instruction (OPNAV) 1510.10B states that entry of individual training information for formal Navy course of instruction is mandatory and accurate, timely data entry is essential for maintaining training records and fleet readiness. On March 10, 2010, a Naval Audit Service Report N2010-0014 stated to the Commander, Naval Education Training Command reported that the trustworthiness of CeTARS data was validated as 99% accurate. Navy Recruiting Command data are routinely used to assess candidate quality. CeTARS is the database of record for Officer Candidate School production. CeTARS data objectively records and reports attrition data. Officer Training Command is responsible for CeTARS data entry as part of the production cycle. Naval Service Training Command is responsibility for oversight and aggregating Officer Training Command data.

Role of the Researcher

Qualifications

The researcher is serving as the Director of Operations, Analysis, and Requirements for Naval Service Training Command. The researcher is responsible for routine and recurring quantitative analysis of Officer Training Command production. The researcher is intimately familiar with accession training quality and quantity production metrics. The researcher is a doctoral student at Cardinal Stritch University

pursuing a Doctor of Education in Leadership for the Advancement of Learning and Service. The research was conducted as part of the University graduation requirements.

Biases

The researcher's bias is that the Commanding Officer and staffs have a prominent role in Officer Candidate School attrition rates. The researcher's bias is that the Commanding Officer determines whether Officer Training Command staff view their role as training-in or weeding-out candidates. The researcher's bias is also that Naval Service Training Command – Navy Recruiting Command staff coordination and feedback will improve predictive modeling used to select and prepare candidates. In addition, the researcher's bias is that when Officer Candidate School staff is invested to prevent drop on request by candidates until after the indoctrination phase that attrition will be significantly reduced. The researcher is responsible for the quantity and quality of accession training production and for recommendations regarding potential mitigation of production issues.

The researcher's assumption was that the attrition and Candidate quality data demonstrates that attrition rates prior to FY11 are attributable to predictive modeling as the basis for screening and selection of Officer Candidates by Navy Recruiting Command. Prior to 2011, Officer Training Command leadership direct involvement with policies, practices and procedures for handling of candidates was less robust and not as engaged as the efforts made since 2011. Likewise, staff coordination by Navy Recruiting Command and Naval Service Training Command was not as comprehensive and focused prior to 2011. The researcher's assumption was that any reduction in attrition since 2011

is attributable to the Officer Training Command, Navy Recruiting Command and Naval Service Training Command mitigation that was introduced in 2011.

Less than 60 days was required to obtain Navy Recruiting Command data and to construct CeTARS queries, compile data, transfer data to Excel and build charts and graphs required to analyze the data. The time span analyzed was historical annual attrition since 1995 and more detailed analysis was conducted on classes from FY10 and FY11-12.

Summary/Coherency of Design

Validity/Trustworthiness

The validity and trustworthiness of Navy Recruiting Command and CeTARS data was assessed as exceptionally high. Both sources of data are routinely used to record and report production metrics. Multiple data queries accomplished triangulation of Navy Recruiting Command and CeTARS data. Moreover, analysis was limited to data available from Navy Recruiting Command and from CeTARS.

CHAPTER FOUR: RESEARCH RESULTS

Presentation of Approach

The purpose of this study was to compare Navy Officer Candidate School attrition during fiscal year (FY) 2010 to Officer Candidate School attrition in FY2011 and FY2012. The research question was, What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

The methodology of the research was a case study employing archival information as the primary the data collection method. The researcher also conducted a literature review of related research in the areas of attrition from military accession initial training.

The research design involved the collection and analysis of archival data that are routinely collected as part of Navy Recruiting Command and Officer Training Command production. Navy Recruiting Command collects an exhaustive amount of data on Officer Candidate School applicants in order to assess the quality of Candidates. Navy Recruiting Command data were examined to compare the populations of Candidates attending Officer Candidate School FY10 – 12. The data reviewed and compared focused on officer aptitude rating and undergraduate grade point average. These categories of data best differentiate the quality of the Candidates. After arriving at Officer Candidate School, Candidate information is routinely entered in the Corporate enterprise Training Administration Resource System (CeTARS) by Officer Training Command. The data entered includes candidate start date, completion or graduation date

and, if applicable, the day of training of attrition by the candidate as well as the reason for attrition.

The research design employed was to first assess Officer Candidate School attrition trends since 1995. The purpose of this assessment was to derive the historical mean annual attrition rates before determining if FY10, FY11 and FY12 attrition rates are statistically significant from historical annual attrition rates. In order to determine historical attrition rates, CeTARS was queried to produce annual attrition for each available year. The mean attrition for these years was calculated and a distribution of annual attrition rates was constructed.

Once calculated, the mean historical attrition and the standard deviation were used to determine if FY10-12 attrition rates were statistically significant (beyond three standard deviations from mean historical attrition). Attrition rates within three standard deviations of the historical mean attrition rate would be deemed as not statistically significant. Attrition rates outside of three standard deviations from the historical mean attrition rate (outliers) were assessed as statistically significant. The purpose of these calculations was to determine if the Commanding Officer and staff intervention at Officer Candidate School resulted in statistically different significant attrition rates in FY 11 and 12.

Attrition rates for these two populations were then compared to determine if the attrition rate in FY10 varied from the attrition rates in FY11 and FY12. The starting hypothesis was that the populations have small variance and are comparable. Analysis of variance of annual attrition rates was conducted. Variance is the square root of the

derived standard deviation for monthly attrition in each year. A small standard deviation indicates that the annual attrition rates are close to the mean and indicates low variability. A large standard deviation indicates greater variability for annual attrition rates. Given comparable populations, the hypothesis was that attrition rates were similar for FY10-12. If attrition rates variance were statistically significant between the years, the difference may be attributable to the leadership intervention by the Commanding Officer for Officer Training Command, Naval Service Training Command and Navy Recruiting Command staff coordination and feedback initiated in FY11.

The methodology next compared the population of Officer Candidates attending in FY10 with the population attending in FY11 and FY12. Analysis of variance was used to compare the mean Navy Recruiting Command data on officer aptitude rating and undergraduate grade point average of these two year groups in order to compare the quality of these populations.

Recruit Training Command attrition rates were compared with Officer Candidate School attrition. As with Officer Candidate School, Recruit Training Command data resides within CeTARS. The purpose was to compare attrition rates for both accession programs over an extended period and then compare 2010-2012 attrition rates. The purpose of the comparison was to assess whether the decrease in Officer Candidate School attrition which resulted from leadership intervention and mitigation was also seen at Recruit Training Command where leadership did not intervene nor deliver mitigation to decrease 2010-2012. Application of predictive modeling for screening and selection of

enlisted applicants remain the primary means of attrition mitigation at Recruit Training Command.

Finally, the methodology assessed drop on request attrition trends for FY 10 and FY 11. CeTARS was queried to attrition reason codes to identify Candidates dropping on request and the day of training for the incidents of drop on request. The hypothesis was that the better prepared Candidates are prior to training, the less inclined candidates will be drop on request and attrite. The premise was that preparation of the candidates by the Navy Recruiting Districts prior to shipping to Officer Candidate School equips the candidate to better cope with the immediate transition to military life experienced during the indoctrination phase. Additionally, the policy changes made at Officer Candidate School with regards to how candidates are treated and how the school staff views their role in training-in versus weeding-out candidates may contribute to candidates successfully completing the indoctrination phase.

Presentation and Summary of Data

Description of Site and Sample

Officer Candidate School is a 12-week course of instruction held at Officer Training Command in Newport, Rhode Island. The 12-week curriculum is divided into sequential trimesters; indoctrination, academics, and leadership. Officer Training Command is a subordinate command of Naval Service Training Command located in Great Lakes, IL. The students are referred to as Officer Candidates. The majority of the candidates are prospective Navy unrestricted line officers who will enter surface, sub-surface, and aviation warfare training following graduation and commissioning.

candidates who are not destined for a URL community will enter restricted (specialized) or staff corps officer communities.

Descriptive data about sample.

The FY12 sample consisted of 749 candidates enrolled in 17 classes which graduated between October 2011 and September 2012. The FY11 sample consisted of 992 candidates enrolled in 16 classes which graduated and commissioned between October 2010 and September 2011. The FY10 sample consisted of 1,342 candidates enrolled in 21 classes which graduated and commissioned between October 2009 and September 2010.

Officer Candidate School attrition since 1995

For the period 1995 – 2012 Officer Candidate School (OCS) annual attrition rates ranged from 6.5% in 2012 to 23.9% in 1998. Mean annual attrition during the period was 13.7%. The standard deviation for annual attrition 1995-2012 was 4.8. FY 2010 OCS attrition was 14.6%. FY2011 attrition was 10.2%. FY2012 attrition was 6.5%. FY2010 and FY2011 attrition both were within one standard deviation of the mean for the period. FY2012 attrition was within two standard deviations of the mean attrition for the period. There was no statistical difference between OCS attrition rates in 2010 to 2012 from the mean OCS attrition rates for the period 1995-2012.

Figure 1

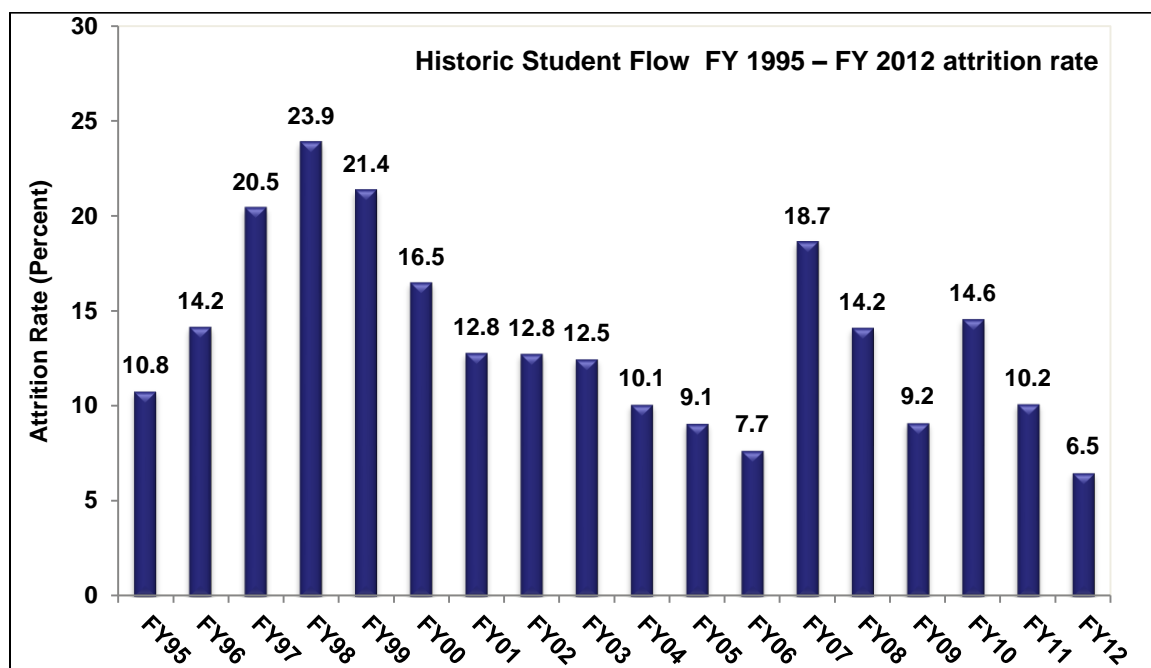
Officer Candidate School Attrition 1995 - 2012

Figure 1 displays OCS attrition from 1995 to 2012. The horizontal axis displays the years. The vertical axis displays the annual percentage rate of attrition. Attrition ranged from 7.7% in 2006 to 23.9% in 1998. The mean attrition for the period was 14.2%

Variance of OCS 2010-2012 Annual Attrition Rates

Analysis of variance (ANOVA) of 2010 to 2012 annual attrition required an assessment of monthly attrition for three fiscal years in order to calculate the mean monthly attrition and standard deviation for monthly attrition for each fiscal year. There was a significant difference between 2010 OCS attrition and 2011 to 2012 OCS attrition. There was no significant difference 2011 and 2012 OCS attrition. The detailed analysis

is summarized in the following section and provided in whole in Appendix A (Ennis, 2012).

Mean monthly attrition and the standard deviation for the three fiscal years is provided in Table 1:

Table 1

Mean Monthly Officer Candidate School Attrition and the Standard Deviation 2010-2012

	Mean Monthly Attrition	Standard Deviation
2010	0.14405	0.04173
2011	0.09604	0.05751
2012	0.06916	0.03100

Figure 2

Probability Plot of Officer Candidate School attrition 2010 - 2012

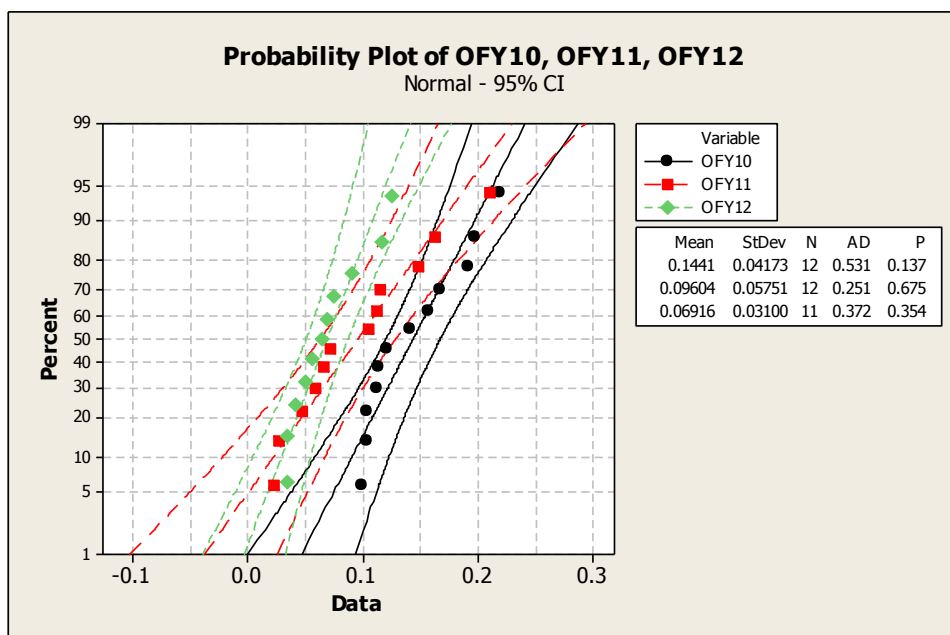


Table 1 displays mean monthly attrition and the standard deviation for 2010 through 2012. Figure 2 displays the probability plot for the data contained in Table 1. Since the sample size is small $n = 12, 12,$ and 11 (less than 30), the normal probability plot in Minitab was used to check that the samples data are a normal distribution. Since the normal probability plot suggests that the data are normally distributed, the ANOVA can be used.

The Tukey test is used in conjunction with ANOVA to find means that significantly different from one another. Using the Tukey test, the mean monthly attrition rates for the three fiscal years were subject to multiple comparisons. The result

was grouping of the three years. Means that do not share a letter in Table 2 are significantly different.

Table 2

Tukey Comparison of Mean Monthly Officer Candidate School Attrition 2010-2012

	Mean Monthly Attrition	Grouping
2010	0.14405 %	A
2011	0.09604 %	B
2012	0.06916 %	B

Table 2 displays the Tukey test groupings. Data for 2010 were grouped separately from 2011 and 2012.

Officer Candidate Quality Comparisons

Mean candidate grade point average (GPA) for the period 2010 to 2012 was 3.3 with a standard deviation of .05. Mean GPA was 3.3 in 2010, 3.3 in 2011 and 3.4 in 2012. Mean GPA for 2010 Candidates was just beyond one standard deviation of the mean for the period. Mean GPA for 2011 Candidates was at the mean for the three year period 2010 through 2012. Mean GPA for 2012 Candidates was just beyond one standard deviation for the period. There was no statistical difference between the GPA of the Candidates for the period 2010-2012.

Mean Officer Aptitude Rating (OAR) test scores for the period 2010-2012 was 53.1 with a standard deviation of 1.0. Mean OAR was 51.6 in 2010, 53.6 in 2011 and 53.9 in 2012. Mean OAR for 2010 Candidates was 1.5 standard deviations below the mean for the period. Mean OAR for 2011 Candidates was .5 standard deviations above

the mean. Mean OAR for 2012 Candidates was just below one standard deviation of the mean for the period. There was no statistical difference between the OAR test scores of the Candidates for the period 2010-2012.

Figure 3

Officer Candidate School Candidate GPA 2010- 2012

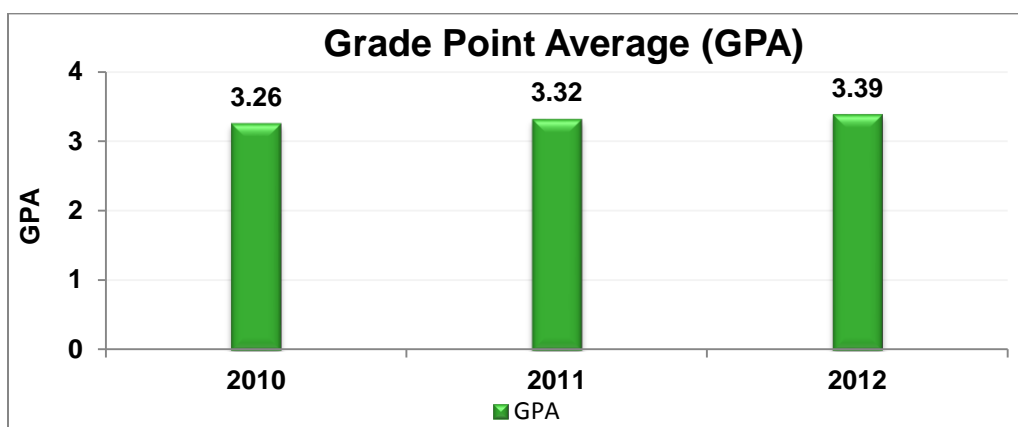


Figure 4

Officer Candidate School Candidate OAR 2010- 2012

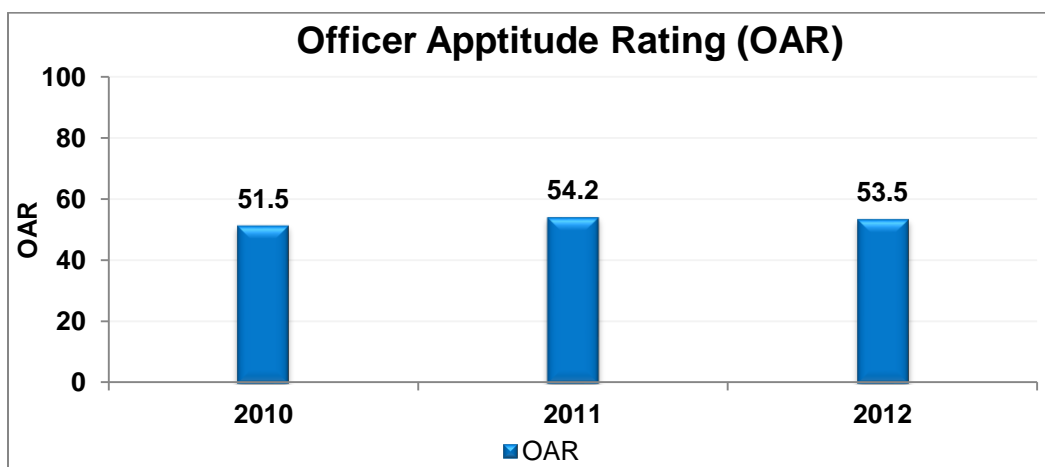


Figure 3 displays mean GPA of Officer Candidates for the period 2010 through 2012. Figure 4 displays mean Officer Aptitude Rating for Officer Candidates for the period 2010 through 2012.

Variance of Officer Candidate Quality 2010-12

ANOVA of 2010-2012 candidate quality compared GPA and OAR of candidates for six fiscal years and compared mean GPA and OAR for each year. While the focus of the study remained on 2010 to 2012, Navy Recruiting data were additionally available for 2007-2009. The Grade Point Averages of candidates from 2010, 2011, and 2012 was assessed as significantly different from one another. However, the range of the differences was small (3.26 – 3.39). The OAR of 2010 candidates was assessed as significantly different from OAR for candidates in 2011 and 2012. There was no significant difference between OAR of 2011 and 2012 candidates. However, the range of the differences was small (51.64 – 53.95). The detailed analysis is summarized in the following section and provided in whole in Appendix B.

Figure 5

Scatterplot of Officer Candidate GPA vs. OAR 2010-2012

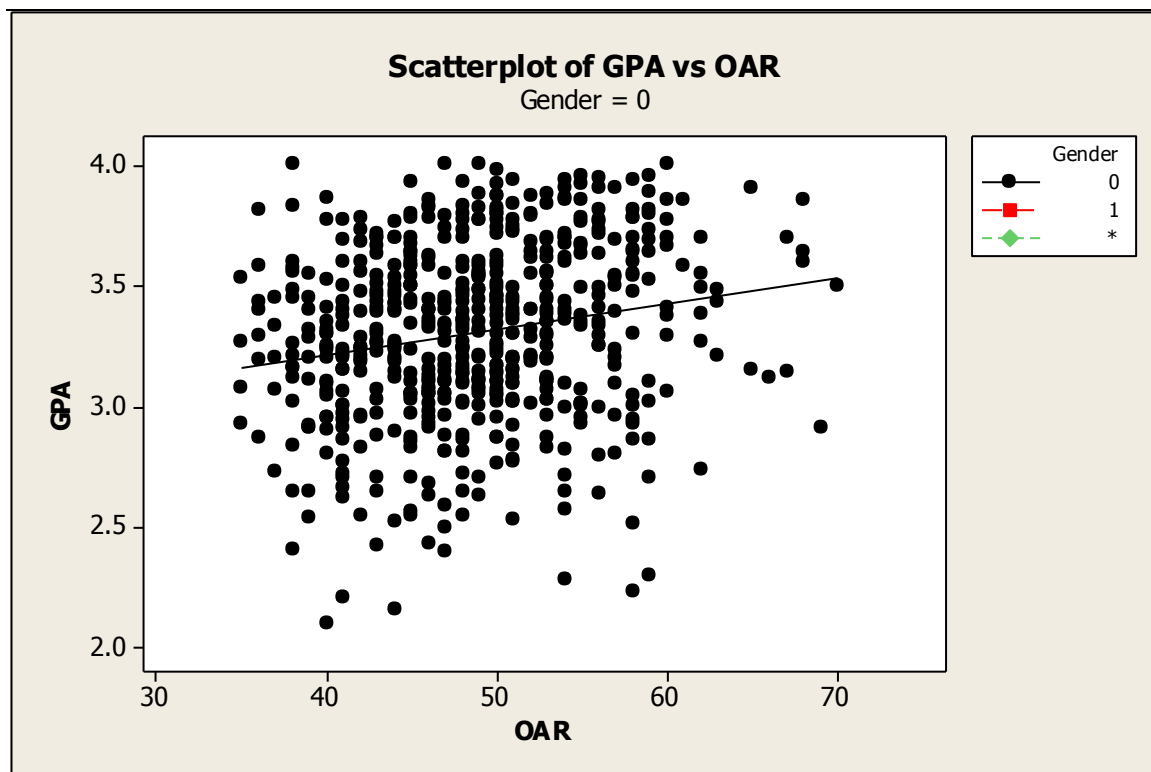


Figure 5 displays scatterplot of GPA and OAR for the period 2010-2012. The plot confirms the tightly clustered pattern of the data and small range of differences for data that is skewed towards GPA greater than 3.0 and OAR greater than 40.

Table 3

Mean Officer Candidate School GPA and Standard Deviation for 2010-2012

	Mean GPA	Standard Deviation
2010	3.2579	0.3760
2011	3.3217	0.3735
2012	3.3902	0.3362

Table 3 displays mean GPA and the standard deviation for the period 2010 through 2012.

The Tukey test is used in conjunction with ANOVA to find means that significantly different from one another. Using the Tukey test, the mean GPA for the three fiscal years was subject to multiple comparisons. The result was grouping of the three years.

Table 4

Tukey Comparison of Mean Officer Candidate School GPA 2010-2012

	Mean	Grouping
2010	3.2579	C
2011	3.3217	B
2012	3.3902	A

Table 5 displays the groupings for 2010-2012 GPA produced by the Tukey test. 2010, 2011 and 2012 were grouped separately indicating significant differences, within a small range, for the years.

Table 5

Mean Officer Candidate School OAR and Standard Deviation for 2010-2012

	Mean OAR	Standard Deviation
2010	51.638	7.114
2011	53.565	7.072
2012	53.951	7.095

Table five displays the mean OAR and standard deviation for the period 2010 through 2012.

The Tukey test is used in conjunction with ANOVA to find means that significantly different from one another. Using the Tukey test, the mean OAR for the three fiscal years was subject to multiple comparisons. The result was grouping of the three years. Means that do not share a letter in Table 6 are significantly different.

Table 6

Tukey Comparison of Mean Officer Candidate School OAR 2010-2012

	Mean	Grouping
2010	51.638	B
2011	53.565	A
2012	53.951	A

Table 6 displays the groupings produced by the Tukey test. Data for 2010 were significantly different than 2011 and 2012. 2011 and 2012 data were grouped together and not significantly different.

Recruit Training Command Attrition

For the period 1993 – 2012 Recruit Training Command (RTC) annual attrition rates ranged from 8.5% in 2004 to 17.17% in 1999. Mean annual attrition during the period was 11.9%. The standard deviation for annual attrition 1995-2011 was 2.6. FY 2010 RTC attrition was 9.1%. FY2011 attrition was 9.8%. FY2012 attrition was 10.7%. FY2010-2012 attrition rates were within one standard deviation of the mean for the

period. There was no statistical difference between RTC attrition rates for the period 2010 to 2012 and the mean RTC attrition rates for the period 1993 to 2012.

Figure 6

Recruit Training Command Attrition 1993-2012

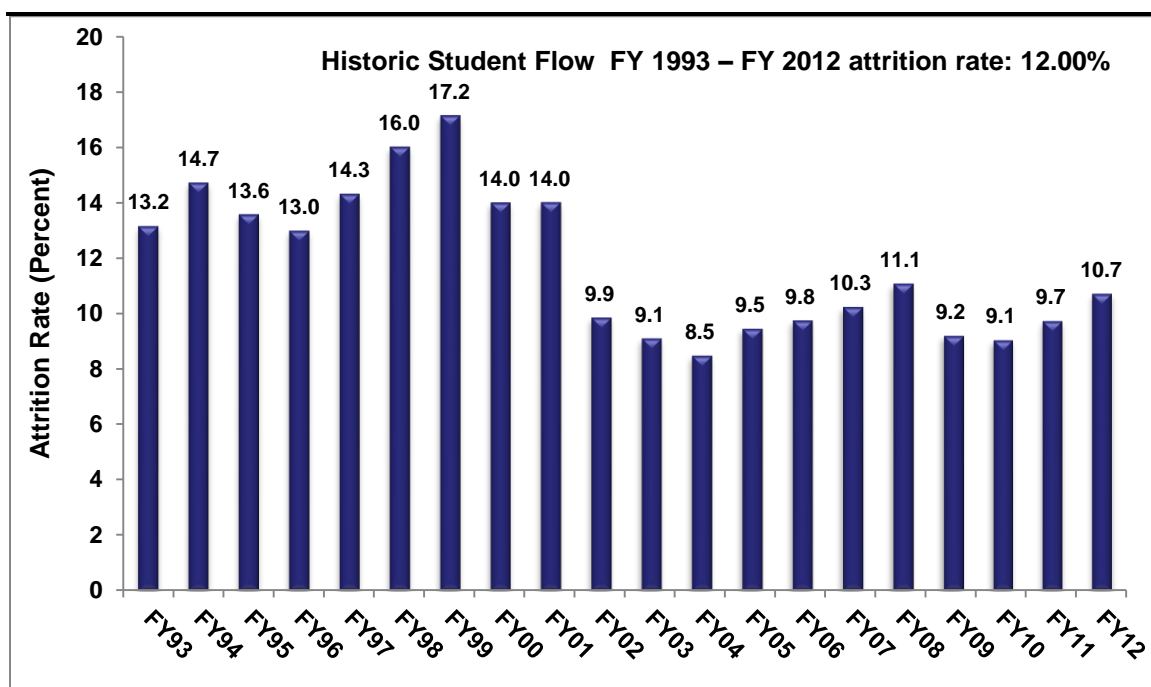


Figure 6 displays RTC attrition for the period 1993 through 2012. The horizontal axis displays the years and vertical axis the annual percentage rate of attrition. The attrition for the period ranged from 8.5% in 2004 to 17.2% in 1999. The mean attrition for the period was 12.0%.

Variance of RTC 2010-2012 annual attrition rates

The calculated ANOVA of 2010-2012 annual attrition required an assessment of monthly attrition for three fiscal years in order to calculate the mean monthly attrition and standard deviation for monthly attrition for each fiscal year. There was no significant

difference between RTC 2010-2012 attrition rates. The detailed analysis is summarized in the following section and provided in whole in Appendix C.

Table 7

Mean monthly Recruit Training Command Attrition and the Standard Deviation 2010-2012

	Mean Monthly Attrition	Standard Deviation
2010	0.09023 %	0.02619
2011	0.09666 %	0.01622
2012	0.10770 %	0.02689

Table 7 displays the mean monthly attrition rate and standard deviation for the period 2010 through 2012.

Figure 7

Probability Plot of Recruit Training Command Attrition 2010-2012

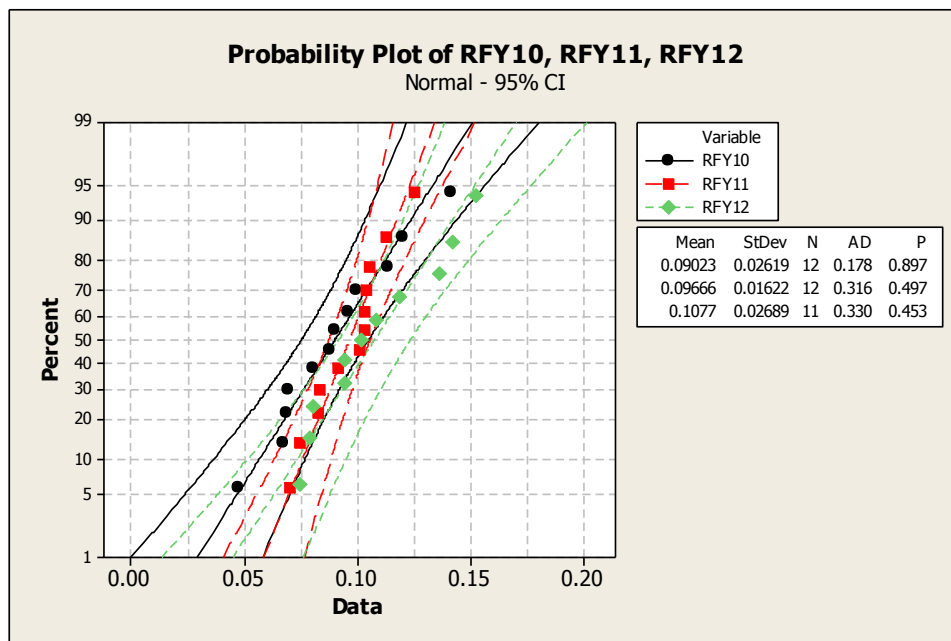


Figure 7 displays the probability plot of the data reported in Table 7. Since the sample size is small $n = 12, 12,$ and 11 (less than 30), the normal probability plot in Minitab was used to check that the samples do come from a normal distribution. Since the normal probability plot suggests that the data are normally distributed the ANOVA can be used.

The Tukey test was used in conjunction with ANOVA to find means that were significantly different from one another. Using the Tukey test, the mean monthly attrition rates for the three fiscal years were subject to multiple comparisons.

Table 8

Tukey Comparison of Mean Monthly Recruit Training Command Attrition 2010-2012

	Mean	Grouping
2010	0.09023	A
2011	0.09666	A
2012	0.10770	A

Table 8 displays the groupings of data produced by the Tukey test. The mean monthly data for the period 2010 through 2012 was grouped within the same group and is assessed as not significantly different.

Frequency day of training drop on request incidents

Figures 7 and 8 provide the number of days on board at the school before drop on request for FY10 and FY11. Days 1 – 36 are the military indoctrination phase for OCS training. In FY10, 96 incidents of drop on request occurred during the first 31 days of training accounting for 48% of total attrition (196). In FY11, 38 incidents of drop on request occurred during the first 33 days of training accounting for 38% of total attrition (101). A 59% decrease in incidents of drop on request during the military indoctrination phase of OCS was observed in 2011 as compared with 2010.

Figure 8

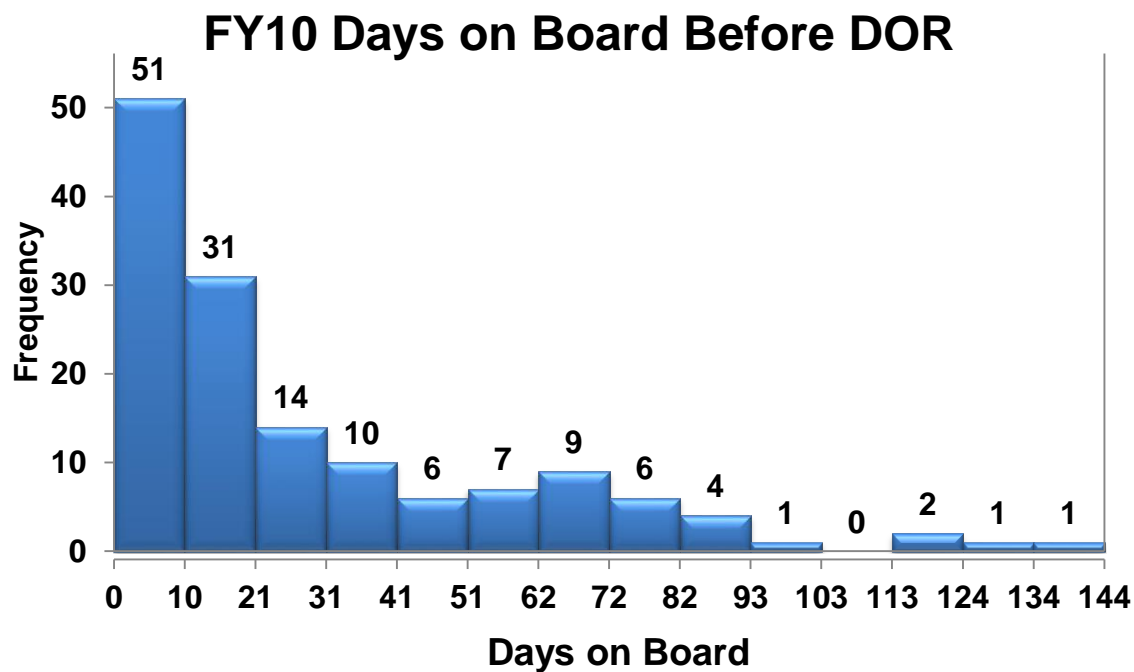
OCS FY10 Time on Board Before DOR

Figure 7 displays the frequency of DOR in 2010 which occurred the first 31 days of OCS training. Ninety six of 143 incidents of DOR occurred within the first 31 days of training.

Figure 9

OCS FY11 Time on Board Before DOR

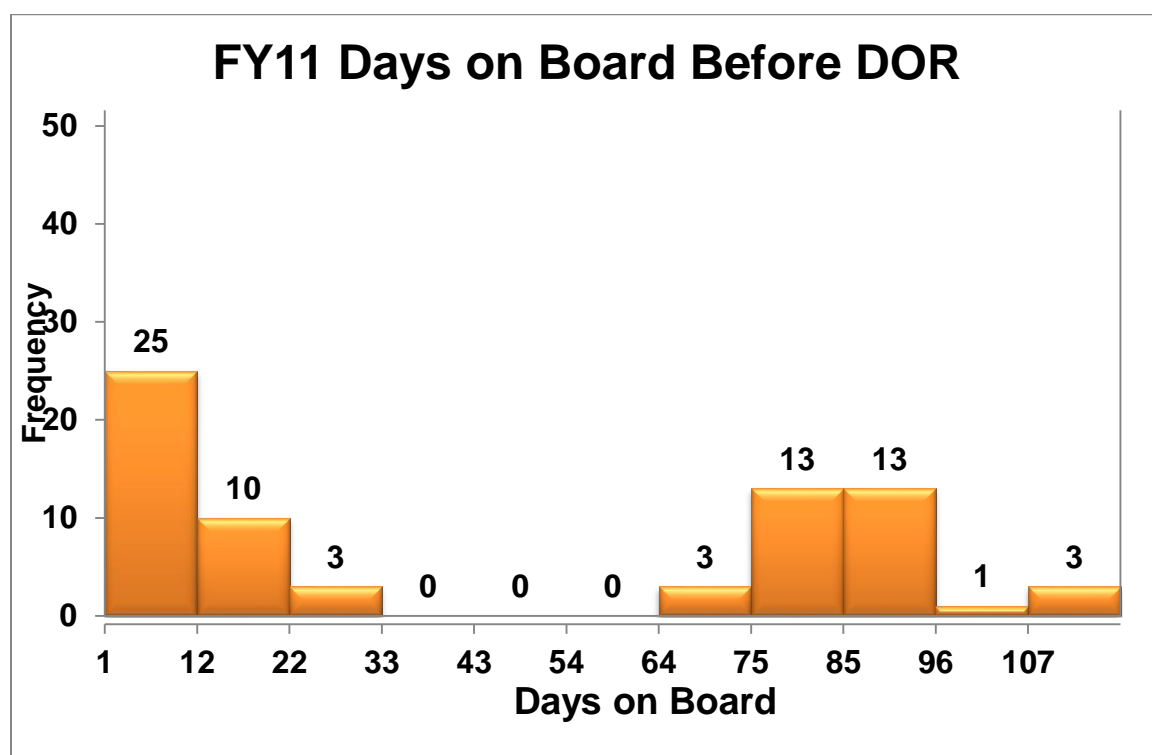


Table 8 displays the frequency of DOR in 2011 within the first 33 days of OCS training. Thirty eight of 71 incidents of DOR occurred within the first 33 days of training.

Summary of Results

Based on the preceding presentation and summary of data generated by the study, a summary of findings/conclusions is as follows:

Officer Candidate School Attrition Since 1995

The decrease in attrition at Officer Candidate School was not statistically significant but provides optics which were well-received by senior Navy leadership. The decrease in attrition results was a more efficient and optimal use of Navy Recruiting Command resources. Less attrition reduces the number of candidates that are required to meet production goals. Lower attrition additionally creates opportunities for individuals who may have otherwise not completed the course prior to 2011. The rate of attrition for Officer Candidate School declined from 14.6% in 2010 to 10.2% in 2011, a 30% decrease. The rate of attrition for Officer Candidate School attrition in 2012 was 6.5%, a 36% decrease from 2011 and a 55% decrease from 2010. The 55% decrease in attrition from Officer Candidate School 2010-2012 was not statistically significant.

Variance of OCS 2010-2012 Annual Attrition Rates

Officer Candidate School attrition rates in 2010, 2011, and 2012 were not statistically different but the optics of lower attrition increased opportunities for the success of individuals attending OCS after 2011. There was a significant difference between 2010 OCS attrition and 2011-2012 OCS attrition. There was no statistically significant difference between 2011 and 2012 OCS attrition.

Officer Candidate Quality Comparisons

The reduction in attrition at Officer Candidate School over the period 2010 to 2012 cannot be attributed to an increase in the quality of the candidates. The 3.3 mean GPA of 2010 Candidates was at the 3.3 mean GPA for the 2010-2012 Candidates. The 3.3 mean GPA of 2011 Candidates was at the mean of 3.3 GPA for 2010-2012 Candidates. The 3.4 mean GPA of 2012 Candidates was higher than the mean 3.3 GPA

2010 to 2012. The 51.6 mean OAR of 2010 Candidates was lower than the mean 53.1 OAR for 2010-2012 Candidates. The 53.6 mean OAR of 2011 Candidates was higher than the mean for the 53.1 OAR of 2010-2012 Candidates and higher than the 51.6 mean OAR for 2010 Candidates. The 53.9 mean OAR of 2012 Candidates was higher than the 53.1 mean OAR of 2010-2011 Candidates.

Variance of Officer Candidate Quality 2010-12

The reduction in attrition at Officer Candidate School over the period 2010 to 2012 cannot be attributed to an increase in the quality of the candidates. The GPA of Candidates from 2010, 2011 and 2012 was assessed as significantly different from one another. However, the range of the differences in GPA 2010-2012 was small (3.26 – 3.39). The OAR of 2010 Candidates was assessed as significantly different from OAR for Candidates in 2011 and 2012. However, the range of the differences was small (51.64 – 53.95). There was no significant difference between OAR of 2011 and 2012 Candidates. The quality of 2010, 2011 and 2012 Candidates as measured by GPA and OAR was assessed as significantly different. However, the range of the differences for both GPA (3.26 – 3.39) and OAR (51.64 – 53.95) were small.

Recruit Training Command Attrition

As Officer Candidate School attrition declined 2010 to 2012, Recruit Training Command attrition increased. Neither the reduction in OCS attrition nor the increase in RTC attrition was statistically significant. However, the optics of lower OCS attrition and higher RTC attrition resulted in increased scrutiny of OCS and increased scrutiny of RTC. The rate of attrition at Recruit Training Command increased from 9.1% in 2010 to

9.7% in 2011, a .6% increase. The rate of attrition at Recruit Training Command in 2012 was 10.7%, a 1% increase from 2011 and a 1.6% increase from 2010. The 1.6% increase Recruit Training Command attrition 2010-2012 was not statistically significant. There was no significant difference between RTC 2010-2012 attrition rates.

Frequency Day of Training Drop on Request Incidents

The interventions introduced at Officer Candidate School had the desired effect of delaying or negating Officer Candidate decisions to drop on request during the military indoctrination phase of OCS. Incidents of drop on request during the military indoctrination phase of OCS training declined 59% from 96 in 2010 to 39 in 2011.

Chapter Five Forecast

With 2010 OCS attrition as the baseline for comparison and analysis of 2011-2012 OCS attrition rates which occurred subsequent to leadership mitigation efforts in 2010, the rate of attrition has declined while Candidate quality has also improved.

The reduction in attrition in 2011 and 2012 was not statistically significant but the optics of a 55% decrease in attrition with two years is noteworthy. The ability to lower attrition below the 10% threshold where senior leadership sensitivity with attrition rates is heightened was additionally noteworthy.

In addition to considering the effect of leadership mitigation efforts to address OCS attrition, the criticality of predictive modeling for screening and selecting applicants is reinforced by the fact that, in combination with leadership mitigation efforts, attrition rates declined as Candidate quality increased.

CHAPTER FIVE: DISCUSSION

Overview

What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

Chapter One introduced the research through description of the background, purpose, approach, significance, delimitations and limitations, and vocabulary of the study. This study focused on the response by Officer Candidate School to an increased rate of attrition during 2010. The intervention and mitigation executed by Officer Candidate School (OCS) leadership was assessed to determine if the actions made a difference in 2011 and 2012 attrition rates and whether similar actions should or could be attempted by leadership of other Navy accession training programs.

Attrition of Officer Candidates from Navy Officer Candidate School for fiscal year (FY; October - September) 2010 was 14.6% (1,342 candidates/1,146 graduates/196 attrite). While there was no stated standard established for an acceptable rate of attrition, 14.6% was viewed as unacceptably high by the Chief of Navy Personnel and Commander Naval Education and Training Command. Commander Naval Service Training Command and the Commanding Officer of Officer Training Command were directed to lower Officer Candidate School attrition to an unspecified rate in FY11.

The lack of a standard of performance for accession training was problematic. Leadership of training commands were concerned that stating an acceptable attrition rate

risks the perception that training standards are lowered in order to meet what is viewed as an arbitrary metric. Consequently, leadership was faced with an ambiguous situation. Leaders are expected to maintain training standards while not exceeding an unstated but nonetheless expected rate of attrition below 10%. When attrition exceeds 10%, the leaders are called to task to explain why their attrition rate exceeds a standard that has not been set. Assuming that their mission is to maintain training standards and thereby accept the natural attrition which results, the leaders assume that have met their commander's intent. When called to task for high attrition rates, the leaders are naturally puzzled at being held accountable for what appears to be an arbitrary goal.

Commander Naval Service Training Command did the unexpected when faced with increasing Officer Candidate School attrition late 2010. He provided the Officer Training Command commanding officer with a goal of 10% attrition. By providing the commanding officer with a goal, Commander Naval Service Training Command caused Officer Candidate School leadership to complete a comprehensive review of training policies, practices, and procedures. The response from leadership was not to artificially lower training standards to meet the 10% goal but instead to determine how the school could lower attrition while maintaining standards.

FY11 Officer Candidate School attrition declined from the FY10 rate. Attrition for FY11 was 10.2% (992 candidates/891 graduates/101 attrite). The Officer Training Command Commanding Officer and Naval Service Training Command – Navy Recruiting Command headquarters staffs initiated actions in 2010 to reduce attrition. The establishment of formalized feedback process from Officer Training Command to Navy

Recruiting Command via Naval Service Training Command provides the Recruiters with a method of assessing the processes and practices used in the field to prepare prospective candidates for accession training. Specifically, the feedback on physical readiness to train informs how Recruiters mentor the potential candidates with regards to physical readiness. Information on the candidates' rationale for drop on request after a brief period of instruction is insightful for Recruiters in identifying traits and characteristics of less motivated individuals as the Recruiters work with potential applicants. Initial indications are that these mitigating actions have had the desired effect in reducing attrition.

In June 2010 the Commanding Officer met with the Officer Candidate School staff and provided detailed policy guidance to Sailors and Marines responsible for military orientation training. The policy guidance included general overall commander's intent, as well as very specific information, with regards to handling and treatment of Officer Candidates. The new Commanding Officer viewed the command's mission as "training-in" versus "weeding out". The staff questioned this new approach and expressed concerns that through lowering attrition, Officer Candidate School would simply be giving unworthy candidates a free pass in order to complete training and earn a commission. The Commanding Officer assured the staff that this was not the case and that standards would be maintained and strengthened on his watch. Nonetheless, the performance standards for Officer Candidate School staff under the new Commanding Officer changed to reflect an expectation for training the cohort of Officer Candidates

into the Navy versus striving to “weed-out” Officer Candidates who met minimum Officer Candidate School qualifications during the recruiting process.

The declining rate of attrition appears to be directly related to the exercise of leadership responsibility by the Commanding Officer and the two headquarters staffs. Attrition is not a fixed cost to the Navy supply chain. While predictive models are important in recruiting and selection, attrition rates can be influenced by leadership mitigating action. Additionally, Officer Candidates are able to drop on request at any time during the course of instruction. A majority of the drops on request occur during the military indoctrination phase of training. If the incidence of drop on request during the military indoctrination phase can be reduced, overall attrition should be reduced significantly. Drops on request are a contributing factor to the attrition rate and leadership action influences the incidence of drop on request.

Attrition during military training has been historically addressed through validation of predictive modeling for recruiters to use during selection and placement of applicants. Attrition of recruits during training was assumed to be the result of inadequate or incomplete screening of applicants by recruiters. Scant effort has been devoted to other areas in the belief that accession training success was solely influenced by predictive modeling. Individuals who failed to complete accession training were viewed as somehow getting past vigilant screening. Corrective action was focused on improving the screening done by recruiters as opposed to analyzing the training command for mitigation.

While there is no argument that validated predictive models are the foundation for ensuring the success of recruits in military training, other efforts appear to hold promise for influencing attrition rates. The rationale for the research question was to assess the effect of leadership intervention through application of realistic job previews, socialization and policy changes that are all predicated and built on a foundation of validated predictive models for selection of applicants.

Chapter Two reviewed literature about theory and research related to the study in the use of predictive models, realistic job previews, socialization, and leadership policy and practices to influence attrition. The dominant theme of the existing research is that attrition, prior to training, can be managed through development and refinement of predictive models used for selection and placement. Finstuen and Barry (1981) determined that models are successfully used to screen candidates for mental, moral, physical, and academic traits or weaknesses that are assumed to lead to attrition. The premise of this approach is that prescreening of candidates provides the best qualified candidates to the training organization.

The available literature on predictive modeling views this effort in isolation from other factors that may reduce attrition. The emphasis on predictive models appears to diminish consideration of other factors in addressing attrition. Nonetheless, one cannot understate the importance of initial screening of candidates for military service. Predictive models based on years of education completed and aptitude test scores have been validated time and time again as best predictors of success during military indoctrination training and during an enlistment.

Holmen and Katter's research on Realistic Job Previews (RJP) provides evidence that success during a training program and subsequent performance on the job following the training is increased by preparing the students before training with realistic information on the training program and job. The premise of RJP is that individuals who are prepared for mental, moral, physical, and academic challenges of a training program are more successful during the training program than are individuals who did not receive realistic training or indoctrination prior to the training. RJP provided context for the rigors of training and allowed the students to understand the rationale for training events. Additionally, RJP allowed students to generate realistic expectations for their training performance during grueling, and at times, seemingly unrelated training events.

Mobley, Fisher, Shaw and Woodman found that the socialization process during initial training increases the students' commitment to complete the training program. Socialization involves interactions among students and interaction between students and instructors. Not surprisingly, students who build trust and confidence with instructors attrite at lower rates than students who do not build trust and confidence with their instructors. Surprisingly, socialization among students has less influence on attrition rates.

Goodstadt's research determined that deliberate leadership policies and practices designed to address attrition are effective in reducing attrition. Training organizations which discourage attrition actually have lower attrition rates. While this may seem obvious, the literature indicates that a large proportion of training organizations are neutral with regards to training policy and practices. The perception is that these

organizations deliver the course of instruction and are willing to accept attrition rates that naturally occur. Alternatively, other organizations design and implement policy and practices aimed at increasing success rates and lowering attrition. Leadership of military indoctrination organizations can and should avail themselves to research-based interventions that have the potential to reduce attrition and optimize the use of training resources. The abundance of research related to predictive modeling and the limited research on leadership practices and policies indicates that this area merits further examination.

Leadership engagement at OTC, and by NSTC and NRC staffs, incorporates many of the themes discussed within the literature review. The foundation for reducing attrition at OCS remains intensive screening of candidates based on their years of education and aptitude test scores. Nevertheless, additional leadership engagement that addresses accession training attrition by changing instructional policies and practices acknowledges that attrition is not solely a function of better predictive modeling for screening and selecting candidates. Local actions initiated at OTC have provided RJP and socialization opportunities for OCs after arrival at OTC. Staff coordination by NSTC and NRC has generated RJP for recruiters in the field through consistent feedback on the performance of previous OCs. This feedback has resulted in better screening and preparation of candidates before shipping these individuals to OTC.

Frontier (2012) linked effort and intelligence to leadership. His discussion of individual and organizational capacity required to grow and achieve applied four frames of reference for thinking about and then improving performance; fixed and growth

mindsets; internal and external locus of control; performance versus learning environments; expertise and reflective practice.

Dickmann and Stanford-Blair (2009) define leadership as the process of influencing others towards the achievement of a goal. The three components of leadership are influence, capacity and the goal. Influence is the action taken by a leader to spur performance of followers. The capacity or intelligence of the leader and follower is the component that enables acquisition and application of the knowledge necessary to perform. The goal is the outcome for which the effort the expended. In simple terms, capacity or intelligence is bridging knowledge and capacity to accomplish mindful leadership action. By analyzing OCS training policies and practices in 2010, the Commanding Officer of Officer Training Command exhibited mindful leadership practices. Dickmann and Stanford-Blair discuss six dimensions or qualities of intelligence; physiological, social, emotional, constructive, reflective, and dispositional. The Commanding Officer initiated actions which influenced the six dimensions of candidate capacity to learn. These actions accommodated the candidates' physiological, social, emotional, constructive, reflective, and dispositional capacities.

In observing and assessing the success of individuals who are often considered outliers due to their exceptional success or performance as compared to general population, Gladwell (2008) offers that the predictable path to increasing capacity in others and opening opportunities to larger population are; opportunity to practice, demographic luck and doing meaningful work. Gladwell emphasizes success is not the brightest who succeed, nor are outcomes always the sum of decisions or effort made but

instead the practice of seizing and making the most of the opportunities presented.

Combining reliance on predictive modeling to screen and select candidates with the application of RJP, socialization and refined leadership policies and practices at OCS increases opportunities for all candidates.

Chapter Three detailed the design of the study through description of historical annual attrition rates, comparison of FY10-12 cohorts, Candidate quality comparisons for FY 10-12, and FY10-12 frequency of attrition by drop on request submissions. The research approach employed a quantitative descriptive analysis of Officer Candidate School attrition employing a case study research design. A case study is an intensive analysis of a specific individual, group, process or event which stresses the analysis within context. The specifics of the individual case that is studied and the context of the events provide the researcher with the opportunity to develop a prism through which other phenomena may be observed and analyzed.

The methodology involved the collection and analysis of archival data that are routinely collected as part of Navy Recruiting Command and Officer Training Command production. Navy Recruiting Command collects an exhaustive amount of data on Officer Candidate School applicants in order to assess the quality of candidates. Navy Recruiting Command data were examined to compare the populations of candidates attending Officer Candidate School FY10 – 12. The data reviewed and compared focusing on officer aptitude rating and undergraduate grade point average. These two categories of data best differentiate the quality of the candidates. After arriving at Officer Candidate School, candidate information is routinely entered in the Corporate enterprise Training

Administration Resource System (CeTARS) by Officer Training Command. The data entered includes candidate start date, completion or graduation date and, if applicable, the day of training of attrition by the candidate as well as the reason for attrition.

The methodology first assessed Officer Candidate School attrition trends since 1995. The purpose of this assessment was to derive the historical mean annual attrition rates before determining if FY10, FY11 and FY12 attrition rates are statistically significant from historical annual attrition rates. In order to determine historical attrition rates, CeTARS was queried to produce annual attrition for each available year. The mean attrition for these years was calculated and a distribution of annual attrition rates was constructed.

Once calculated, the mean historical attrition and the standard deviation were used to determine if FY10-12 attrition rates were statistically significant. Attrition rates within three standard deviations of the historical mean attrition rate were assessed as not statistically significant. Attrition rates outside of three standard deviations from the historical mean attrition rate (outliers) were assessed as statistically significant. ANOVA was used to assess if OCS attrition rates, quality of Officer Candidates and RTC attrition rates were significantly different during the period 2010 through 2012. The purpose of these calculations was to determine if the Commanding Officer and staff intervention at Officer Candidate School resulted in statistically significant attrition rates in FY 11 and 12.

Attrition rates for these two populations were then compared to determine if the attrition rate in FY10 was significantly different from the attrition rates in FY11 and

FY12. The starting hypothesis was that the populations have small variance and are comparable. Variability of annual attrition rates was determined. The research next compared the population of Officer Candidates attending in FY10 with the population attending in FY11 and FY12. The intent of this comparison was to determine the variability of the two populations. Analysis of variance was used to compare the mean Navy Recruiting Command data on officer aptitude rating and undergraduate grade point average of these two year groups in order to compare the quality of these populations. Attrition rates for these two populations were compared to determine if the attrition rate in FY10 varied from the attrition rates in FY11 and FY12. The starting hypothesis was that the populations have small variance and are comparable with similar attrition rates. If attrition rates varied between the years, the difference may be attributable to the leadership intervention by the Commanding Officer for Officer Training Command, Naval Service Training Command and Navy Recruiting Command staff coordination and feedback initiated in FY11. With Navy Recruiting Command predictive modeling for candidates screening and selection a constant throughout the period, differences in attrition may be attributable to mindful leadership practices introduced in late 2011.

Recruit Training Command attrition rates were compared with Officer Candidate School attrition. As with Officer Candidate School, Recruit Training Command data resides with CeTARS. The purpose was to compare attrition rates for both accession programs over an extended period and then compare them to 2010-2012 attrition rates. The purpose of the comparison was to assess whether the expected decrease in Officer Candidate School attrition which resulted from leadership intervention and mitigation

was also seen at Recruit Training Command where leadership did not intervene nor deliver mitigation to decrease 2010-2012. Application of predictive modeling for screening and selection of enlisted applicants remain the primary means of attrition mitigation at Recruit Training Command.

Finally, the research assessed drop on request attrition trends for FY 10 and FY 11. CeTARS was queried to report the day of training of attrition for incidents of drop on request. The expectation was that the longer a candidate remains in training, the less likely it is for a candidate to attrite. The premise was that preparation of the candidates by the Navy Recruiting Districts prior to shipping to Officer Candidate School equips the candidate to better cope with the immediate transition to military life experienced during the indoctrination phase. Additionally, the policy changes made at Officer Candidate School with regards to how candidates are treated and how the school staff views their role in training-in versus weeding-out candidates may contribute to candidates successfully completing the indoctrination phase.

Chapter Four presented and summarized data generated by the study design in alignment to the study research question. For the period 1995 – 2012 Officer Candidate School (OCS) annual attrition rates ranged from 6.5% in 2012 to 23.9% in 1998. Mean annual attrition during the period was 13.7%. The standard deviation for annual attrition 1995-2012 was 4.8. FY 2010 OCS attrition was 14.6%. FY2011 attrition was 10.2%. FY2012 attrition was 6.5%. FY2010 and FY2011 attrition both were within one standard deviation of the mean for the period. FY2012 attrition was within two standard deviations

of the mean attrition for the period. There was no statistical difference between OCS attrition rates in 2010 – 2012 from the mean OCS attrition rates for the period 1995-2012.

Analysis of variance (ANOVA) of 2010-2012 annual attrition required an assessment of monthly attrition for three fiscal years in order to calculate the mean monthly attrition and standard deviation for monthly attrition for each fiscal year. There was a significant difference between 2010 OCS attrition and 2011-2012 OCS attrition. There was no significant difference 2011 and 2012 OCS attrition. The introduction of mindful leadership practices in 2011 that were still in place in 2012 differentiate 2010 and 2011-12. Assuming that the application of predictive modeling is constant for 2010-2012, the application of mindful leadership practices in 2011 appears to have influenced the trend of lowered attrition in 2011 and in 2012.

Mean candidate grade point average (GPA) for the period 2010-2012 was 3.3 with a standard deviation of .05. Mean GPA was 3.3 in 2010, 3.3 in 2011 and 3.4 in 2012. Mean GPA for 2010 candidates was just beyond one standard deviation of the mean for the period. Mean GPA for 2011 candidates was at the mean for the period. Mean GPA for 2012 candidates was just beyond one standard deviation for the period. There was no statistical difference between the GPA of the candidates for the period 2010-2012.

Mean Officer Aptitude Rating (OAR) test scores for the period 2010-2012 was 53.1 with a standard deviation of 1.0. Mean OAR was 51.6 in 2010, 53.6 in 2011 and 53.9 in 2012. Mean OAR for 2010 candidates was 1.5 standard deviations below the mean for the period. Mean OAR for 2011 candidates was .5 standard deviations above

the mean. Mean OAR for 2012 candidates was just below one standard deviation of the mean for the period. There is no statistical difference between the OAR test scores of the candidates for the period 2010-2012.

The ANOVA of 2010-2012 Candidate quality compared GPA and OAR of candidates for six fiscal years compared mean GPA and OAR for each year. The GPA of candidates from 2010, 2011 and 2012 was assessed as significantly different from one another. However, the range of the differences is (3.26 – 3.39) was small. The OAR of 2010 candidates was assessed as significantly different from OAR for Candidates in 2011 and 2012. There was no significant difference between OAR of 2011 and 2012 candidates. As with GPA, the range of differences (51.64 – 53.95) was small.

For the period 1993 – 2012 Recruit Training Command (RTC) annual attrition rates ranged from 8.5% in 2004 to 17.2% in 1999. Mean annual attrition during the period was 11.9%. The standard deviation for annual attrition 1995-2011 was 2.6. FY 2010 RTC attrition was 9.1%. FY2011 attrition was 9.8%. FY2012 attrition was 10.7%. FY2010-2012 attrition rates were within one standard deviation of the mean for the period. There is no statistical difference between RTC attrition rates in 2010 – 2012 from the mean RTC attrition rates for the period 1993-2012.

The calculated ANOVA of 2010-2012 annual attrition required an assessment of monthly attrition for three fiscal years in order to calculate the mean monthly attrition and standard deviation for monthly attrition for each fiscal year. There was no significant difference between RTC 2010-2012 attrition rates.

Days 1 – 36 are the military indoctrination phase OCS training. In FY10, 96 incidents of drop on request occurred during the first 30.9 days of training accounting for 48% of total attrition (196). In FY11, 39 incidents of drop on request occurred during the first 32.7 days of training accounting for 38% of total attrition (101). A 59% decrease in incidents of drop on request during the military indoctrination phase of OCS was observed in 2011 as compared with 2010.

Discussion of Conclusions

Purpose of the Study

The purpose of this study was to measure the effect of leadership engagement to address Officer Candidate School attrition. The related research question: What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

Discussion of Conclusions

Conclusions Related to Research Purpose.

Study Finding/Conclusions about: What is the relationship between the OCS attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention?

1. Officer Candidate School (OCS) attrition is a multi-variable problem. Reductions in attrition are attributable to many influences including the combined effects of predictive modeling, realistic job previews, socialization, and leadership policy and practices.

2. The catalyst for leadership intervention to address OCS attrition was the Commander of Naval Service Training Command providing the Commanding Officer of Officer Training Command (OTC) with a goal of 10% or less OCS attrition. In the absence of a specific attrition rate as a target, OCS leadership had not previously intervened to provide mitigation for Candidate attrition.
3. The 55% decrease in OCS attrition during the period 2010-12 coincided with sustainment of a heavy reliance on predictive modeling to screen and select the best qualified applicants, more consistent use of the “Faces of OCS” video by Navy Recruiting Command (NRC) prior to shipping candidates to Officer Candidate School, changes to the Commanding Officer’s standards and policies for OCS staff and the reestablishment of communication, coordination and feedback channels between NRC and Navy Service Training Command (NSTC) staffs.
4. The 55% decrease in OCS attrition 2010-2012 was not statistically significant as compared to OCS attrition rates 1995-2012. The decrease in attrition may be the result of chance. Nonetheless the optics of the decline in attrition rates was viewed as a positive trend by senior Navy leadership.
5. Data on monthly attrition rates indicates that the timing of reestablishing and enhancing communication, coordination, and feedback channels between Naval Service Training Command (NSTC) and Navy Recruiting Command (NRC) in January 2011 coincided with a trend of reduced

attrition. The substantive dialogue between staffs appears to have contributed towards creating the conditions for Recruiters in the field to better prepare prospective Officer Candidates for the mental, academic and physical rigors of the school.

6. The decreased incidents of drop on request during the initial phase of OCS occurred following the updating of the video “Faces of OCS” and ensuring that prospective candidates viewed the video at the Navy Recruiting District prior to shipping to Officer Candidate School as realistic job preview appears to have better prepared individuals for the initial challenges of the school and contributed to reduced attrition during the military indoctrination phase of training.
7. The feedback on Candidate performance from Officer Training Command that was supplied to Naval Service Training Command and Navy Recruiting Command should contribute to improving the predictive modeling used by Recruiters to screen and select applicants.
8. Candidate quality as measured by undergraduate grade point average (GPA) and Officer Aptitude Rating (OAR) test score, improved during the period 2010-2102. There were statistically significant differences between the years but the differences were within a very small range.
9. The trend of declining OCS attrition was viewed by senior leadership as an issue that had been addressed or solved once attrition declined below an arbitrary 10% threshold. Consequently senior leadership focus shifted to

Recruit Training Command (RTC) attrition trends during the summer of 2011.

10. For the period 2010-2012 RTC attrition increased from 9.1% to 10.7%. While there was no statistically significant change in RTC attrition, the rate exceeded the arbitrary threshold of 10% and was viewed by senior leadership with alarm.
11. Incidents of drop on request (DOR) during the military indoctrination phase of training (~30 days) declined from 2010 to 2011. The reduction of DOR during the indoctrination phase of OCS in FY11 contributed to the 33% reduction in total OCS attrition in FY11 as compared to FY 10.
12. The decline in DOR coincided with an increased emphasis of Candidate preparation prior to shipping to OCS by NRC which includes a mandatory review of the “Faces of OCS” video as a realistic job preview of OCS.
13. The feedback loop on Candidate performance from the school to the Recruiter identified additional opportunities for Recruiters to improve candidates preparation for training and predictive models used for applicant screening and selection.
14. Reduced incidents of DOR (2010-2011) during the indoctrination may also be attributable to the implementation of the Officer Training Command (OTC) Commanding Officer’s June 2010 revised standards and policies. These policy changes included changes in conduct of Officer Candidate School staff in dealing with candidates during indoctrination.

The change in standards and policy changed the focus of the school staff from weeding-out unsuitable candidates to training-in inexperienced potential colleagues.

15. The OTC Commanding Officer's policy and practices revisions additionally created the conditions to allow a greater degree of socialization between OCS staff and candidates as well as socialization among candidates. The increased level of socialization may decrease the potential risk of staff marginalizing or objectifying candidates during all phases of training but in particular during the military indoctrination phase of OCS. Increased socialization may have contributed to the decline in incidents of DOR.

Conclusions Compared to Related Literature

Comparison of Conclusion to Literature Theme regarding the use of predictive models to influence attrition rates.

The dominant theme of the existing research is that attrition can be managed through development and refinement of predictive models used for selection and placement. The models are used to screen candidates for mental, moral, physical, and academic traits or weaknesses that are assumed to lead to attrition. The premise of this approach is that prescreening of candidates provides the best qualified candidates to the training organization.

The effort to lower Officer Candidate School attrition starts from a foundation of sustaining and improving predictive modeling by Navy Recruiting Command to screen

and select applicants to be Officer Candidates. The basis of the model is that undergraduate GPA and OAR scores can be correlated to successfully completing training at OCS. The 55% reduction in attrition from 2010-2012 Candidate occurred as Candidate quality increased within a very narrow range of undergraduate Grade Point Averages and Officer Aptitude Rating test scores. While attrition declined with a relatively small increase in Candidate quality, the hypothesis was that in the absence of sustained and improved predictive modeling for screening and selecting applicants, Candidate quality would be inconsistent and potentially degraded. It is further assumed that a decrease in Candidate quality will result in an increase of attrition.

Comparison of Conclusion to Literature Theme Regarding the Use of Realistic Job Previews to Influence Attrition Rates.

The research of Youngblood, Mobley, and Meglino, (1981) on Realistic Job Previews (RJP) provides evidence that success during a training program and subsequent performance on the job following the training is increased by preparing the students before training with realistic information on the training program and job. The premise of RJP is that individuals who are prepared for mental, moral, physical, and academic challenges of a training program are more successful during the training program than are individuals who did not receive realistic training or indoctrination prior to the training. RJP provided context for the rigors of training and allowed the students to understand the rationale for training events. Additionally, RJP allowed students to generate realistic expectations for their training performance during grueling, and at times, seemingly unrelated training events.

Monthly attrition data indicates that the revision of and wide spread use the “Faces of OCS” video by Navy Recruiting Command to prepare candidates for physical, academic and mental challenges of Officer Candidate School coincided with a declining rate of attrition. The research was unable to isolate and measure the effect this realistic job previews. However, attrition was reduced 2010-2012 with combination of the effects of realistic job previews, predictive modeling, socialization and leadership policy and practices changes at Officer Candidate School.

Comparison of Conclusion to Literature Theme Regarding the Use of Socialization to Influence Attrition Rates

The research by Strickland (2005) proposed targeted training for Army supervisors to assist enlistees with adjustment to the military. The training identified is closely aligned with socialization efforts that are designed to allow individuals undergoing military indoctrination to more closely identify with their instructors during accession training. The work of Lucas, Whitestone, Segal, and Segal, (2008) validated the connection between social support and organizational attrition. For the period of military indoctrination at Recruit Training Command (RTC), Sailors, with reported social support from family and from their Recruit Division Commanders (RDC, military indoctrination instructors), experienced lower attrition than did their counterparts who did not report having a similar social support network. Social support from friends not in the military and from other recruits at RTC was correlated with a greater likelihood of attrition from RTC. The survey further reported a high incidence of social undermining

by fellow recruits. Additionally, perceived undermining by RDCs, family, and friends were all associated with a greater likelihood of attrition. .

The socialization process during initial training increases the students' commitment to complete the training program. Socialization involves interactions among students and interaction between students and instructors. Not surprisingly, students who build trust and confidence with instructors attrite at lower rates than students who do not build trust and confidence with their instructors. Surprisingly, socialization among students has less influence on attrition rates.

The Commanding Officer's change in policy and practice during the indoctrination phase of Officer Candidate changed the focus from "weeding-out" to "training-in". This revised approach to training caused the staff to become more vested in the success of the candidates and created the opportunity to reduce the potential of marginalizing and objectifying the candidates. The research was unable to isolate and measure the effect of socialization. However, attrition was reduced from 2010 to 2012 with combination of the effects of socialization, predictive modeling, realistic job previews, and leadership policy and practices changes at Officer Candidate School.

Comparison of Conclusion to Literature Theme Regarding the Influence of Leadership Policy and Practices to Influence Attrition Rates

Goodstadt's (1980) research proposal is a unique example of an attempt to assess the effect of command leadership policy and practices on attrition and retention. Consequently, the proposed study intends to determine if attrition can be predicted based on quantitative and qualitative assessment of unit disciplinary decision-making practices

in the Marine Corps. The conceptualization of this approach to attrition is derived from a realization that the existing research contains gaps in understanding how the chain of command influences attrition and retention.

Goodstadt's preliminary findings indicate that leaders play a significant role in attrition rates within their units. Additionally, a 30% variance in attrition rates between units can be attributed to unit-specific practices. A tertiary finding indicates that unit leadership philosophy and beliefs are related to unit attrition rates. Simply put, Goodstadt proposed that individual leaders can, and do, influence attrition rates of their unit. The implication is that leadership policies and practices can be shaped in order to influence attrition or retention behaviors. Goodstadt reminds the reader that attrition is not always imposed on an organization but frequently caused by the organization. Follow-up research was planned to conduct experimental studies to further assess the influence of leadership policy and practices on attrition.

Deliberate leadership policies and practices designed to address attrition are effective in reducing attrition. Training organizations which discourage attrition actually have lower attrition rates. While this may seem obvious, the literature indicates that a large proportion of training organizations are neutral with regards to training policy and practices. The perception is that these organizations deliver the course of instruction and are willing to accept attrition rates that naturally occur. Alternatively, other organizations design and implement policy and practices aimed at increasing success rates and lowering attrition. Leadership of military indoctrination organizations can and should avail

themselves to research-based interventions that have the potential to reduce attrition and optimize the use of training resources.

As with socialization, changes to leadership policy and practices changed the tactics used by the staff during OCS and specifically how candidates were treated during the military indoctrination phase of training. The research was unable to isolate and measure the effect of leadership policy and practices. However, attrition was reduced from 2010 to 2012 with combination of the effects of changes to leadership policy and practice, predictive modeling, realistic job previews, and socialization.

Comparison of Conclusion to Literature Theme Regarding Intelligence and Learning (Capacity) as Applied to Leadership

Dickmann and Stanford-Blair (2009) define leadership as the process of influencing others towards the achievement of a goal. The three components of leadership are influence, capacity, and the goal. Influence is the action taken by a leader to spur performance of followers. The capacity or intelligence of the leader and follower is the component that enables acquisition and application of the knowledge necessary to perform. The goal is the outcome for which the effort the expended. In simple terms, capacity or intelligence is bridging knowledge and capacity to accomplish mindful leadership action. Dickmann and Stanford-Blair discuss six dimensions or qualities of intelligence; physiological, social, emotional, constructive, reflective, and dispositional.

The policy changes at made by OTC staff in handling of candidates during the military indoctrination phase of OCS addresses the physiological dimension of the capacity of OCS staff and candidates and an understanding of the physical demands and

limitations of the human brain. Mindful leadership appreciates that a human brain functions best with adequate rest and proper nutrition. Knowing that an individual with inadequate rest and improper nutrition has reduced capacity for learning, the staff is equipped with the means to enhance as opposed to decrease the capacity of candidates under instruction based on the amount rest and nutrition available to the students.

Socialization efforts by OCS that were spurred by the changes to candidate handling policies and procedures address the social, emotional, and dispositional capacities of OCS staff and candidates. While the formal military protocols between drill instructor and candidate remain in place, the staff now view the candidates from a different prism with the agreed upon goal of “training-in” individuals who have volunteered to serve as opposed to weeding-out individuals who have yet to prove that they are worthy to join.

With availability to a significantly improved realistic job preview with the updated version of the “Faces of OCS”, candidates are now able to construct meaning and memory in anticipation of training in order to develop patterns and premeditated responses to the physical and mental challenges of OCS prior to arrival at the school. Equipped with information, the individual is better prepared to react, respond, and adapt to the military indoctrination training that may have been otherwise overwhelming and daunting in the absence of the realistic job preview.

Likewise, a realistic job preview sets the conditions for the individuals to reflectively rehearse options in order to rationalize their decisions on whether to quit and drop on request or to continue training. This reflective capacity allows the individual to

make an informed decision by weighing the immediate relief gained by walking away from the rigors of training as opposed to fully considering the return on investment from remaining in school in order to attain the positive outcomes associated with the prospects of future career as a Navy officer.

The realistic job preview in combination with changes to OTC policies and procedures affects the dispositional capacity of OCS staff and candidates. The habits, tendencies, inclinations, attitudes, personality, character, temperament of staff with regards to Candidate handling during military indoctrination are now focused on training in versus weeding out candidates. Applicants viewing the video prior to arrival at OCS are predisposed to successfully completing the training curriculum after seeing and hearing from individuals who successfully met the challenges of OCS.

Gladwell's (2008) premise is that outliers are not in reality outliers but instead individuals who have the opportunity to practice, demographic luck, and meaningful work to accomplish has implications for NSTC leadership. A training-in versus a weeding-out philosophical approach to accession training appears to result in lower attrition rates. With fewer individuals being sent home during military indoctrination training, the Navy has the opportunity to provide potential outliers with increased opportunity to serve and do meaningful work.

Conclusions

Attrition reduction is a multi-faceted issue with no one single panacea or magic bullet available to address attrition trends. Predictive models using undergraduate GPA and OAR scores, realistic job previews, socialization, leadership policy and practices, and

organizational leadership who consider the implications of intelligence and capacity of staff and students all combine to lower attrition.

Discussion of Implications

The findings of this study further inform fields of study and behavior associated with reducing attrition in military accession training. Study findings have particular implications for practice and research, as well as related leadership, learning and service.

Implications for Practice

Attrition reduction requires a multi-disciplinary approach by leadership of training organizations which recognizes the criticality of the combined influence of predictive modeling for screening and selection of applicants, realistic job previews to prepare applicants for training, socialization of staff and students to prevent marginalization and objectification of students and leadership policy and practices which emphasize “training-in” over “weeding-out” of students.

Standards and expectations for attrition cannot be assumed, implied or arbitrarily set based on the optics of one digit or two digit integers. The threshold of acceptable rates of attrition should be determined based on historical attrition trends and pragmatic assessments of feasible goals. Once defined, these standards should be articulated to ensure that leadership of training organizations are able to design and development mitigation strategies necessary to meet attrition goals. In the absence of pragmatic and defined targets, leadership may incorrectly assume that natural attrition by relying solely on predictive modeling to screen and select the right applicants is acceptable and that mitigating action by the training organization is not necessary to influence attrition.

If able to leverage predictive modeling, realistic job previews, socialization and leadership policies and practices to lower accession training attrition, the Navy supply chain may be able to recruit fewer individuals or to assume risk by recruiting from different or outlier demographic groups to meet accession goals and thereby reduce the cost of sustaining while potentially diversifying the force.

Augmenting the strength of predictive modeling with realistic job previews, socialization and leadership policies and practices in order to lower attrition rates may be generalizable to Recruit Training Command and other accession programs. Application of these measures starts with leadership viewing the task as training-in as opposed to weeding-out process candidates and Recruits. When weeding-out is the goal of accession training instructors, the process may be viewed as a rite of passage or initiation rite in which individuals are required to prove that they are worthy to join the ranks. If training-in is the goal of school staff, the process may be viewed as stewardship of each Candidate or Recruit throughout training until completion of the course of instruction.

Implications for Leadership, Learning, and Service

Mindful leadership, as defined by Dickmann and Stanford-Blair, has application for military accession training leadership practices. Leveraging knowledge of the dimensions of intelligence and capacity of staff and students optimizes leadership effort to influence attrition and student performance.

Mindful leadership practices which lead to lower attrition have the potential to create opportunities for individuals who may have otherwise not completed military

accession training to complete their instruction and then go on to serve. As national demographics change and the population of individuals who are eligible to serve and who have a propensity to serve becomes smaller, the military should view every qualified volunteer as a potential outlier who may only need the opportunity to practice in order to contribute to the meaningful work of the military. In the absence of realistic job previews, socialization and mindful leadership practices, these individuals may be objectified and marginalized and not complete accession training.

Implications for Research

A more complete understanding of the individual effects of predictive modeling, realistic job previews, socialization and leadership policy and practices may require an experimental design which allows isolation of one or more of these factors to compare individual effects. While this study observed and reported on the combined effect of these factors, this study was unable to determine if any one factor, in addition to predictive modeling, influenced attrition rates. Pragmatically, experimental design opportunities will be limited given the necessity sustain the quantity and quality of military accession training production and the potential for losing Recruits and candidates who attrite in response to variables assessed through the experimental design. The longer term benefits of experimental design may remain secondary to short term requirement to sustain training production to meet more immediate military personnel needs.

Concluding Remarks

The study validated the initial hypothesis that military accession training attrition is not simply a function of applying a predictive model for recruiting and screening individuals. Leadership of training organizations has an inherent responsibility to implement policy and practices designed to reduce attrition of volunteers for military service. Leadership of training organizations cannot abdicate responsibility for attrition by simply attributing attrition to inadequate predictive modeling, poor screening and bad selections by recruiting organizations.

The study posed the following research question: What is the relationship between the Officer Candidate School attrition rate and Officer Training Command, Naval Service Training Command and Navy Recruiting Command leadership intervention? The relationship is that leadership intervention can reduce OCS attrition. In this study, the OCS attrition rate was reduced when leadership intervention in the form of realistic job previews, socialization and leadership policy and practices that are informed by mindful understanding of intelligence and capacity of staff and students were combined with predictive modeling techniques designed to screen and select applicants.

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Appendix A

Analysis of Variance for OCS attrition 2010-2012

Table A1

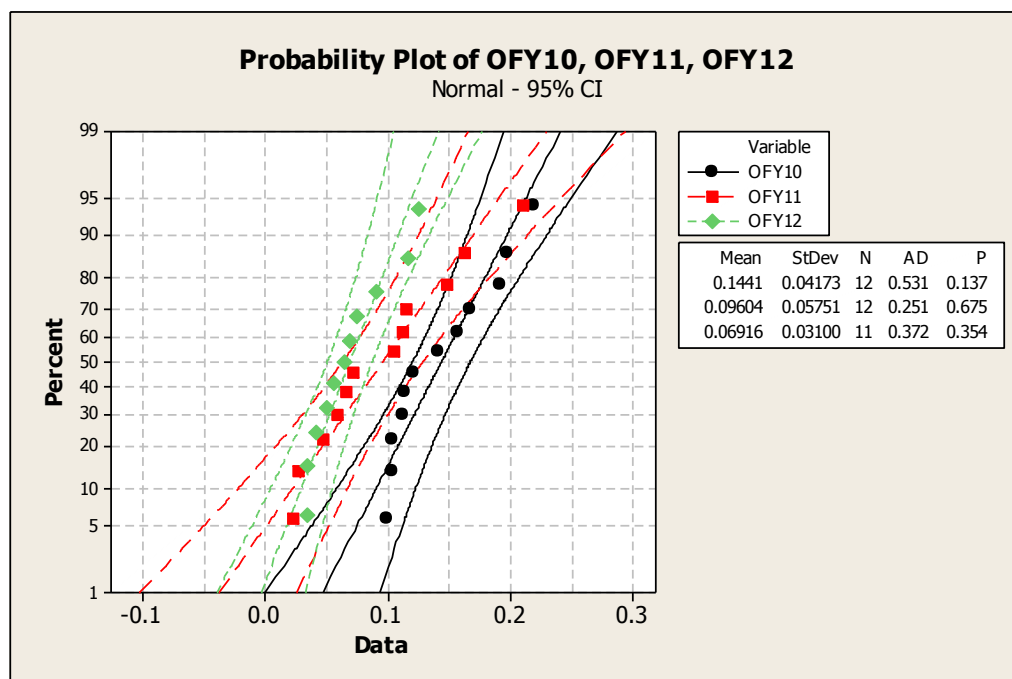
Month OCS attrition for FY 10-12

O FY10	O FY12	OF Y11
0. 167742	0. 163121	0.0 34091
0. 157233	0. 211111	0.0 65574
0. 103627	0. 066667	0.0 90909
0. 197279	0. 071685	0.0 56497
0. 191882	0. 148148	0.1 25000
0. 141243	0. 115942	0.0 74419
0. 218978	0. 104762	0.0 35088

0. 099548	0. 113208	0.0 68966
0. 103896	0. 022989	0.0 50000
0. 113821	0. 048193	0.0 42553
0. 112450	0. 027211	0.1 17647
0. 120930	0. 059406	

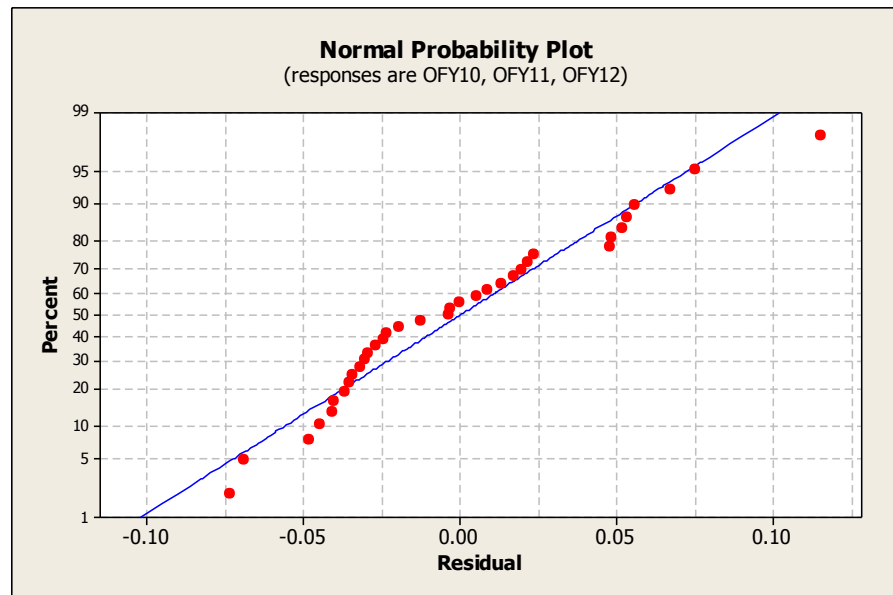
Figure A1

Probability Plot of Officer Attrition FY 10-12



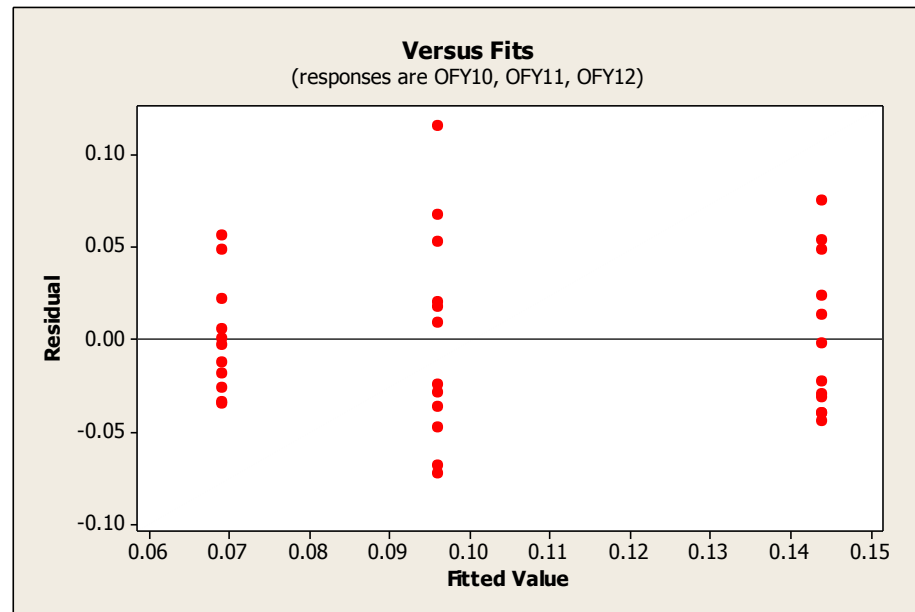
Since the sample size is small $n = 12, 12, \text{ and } 11$ (less than 30), the normal probability plot in Minitab was used to check that the samples do, indeed, come from a normal distribution (see above). Since the normal probability plot suggests that the data are normally distributed, using the fat pencil test, the ANOVA can be used. P -values for the Anderson-Darling test were assessed. Since the p -values of 0.137, 0.675, and 0.354 are all larger than a significant level value of $\alpha = 0.05$, it can conclude at the 5% significance level that the distributions of the differences are normal.

Figure A2

Normal Probability Plot

The normal probability plot is not too far from a straight line. It seems that the normality assumption is satisfied for these data.

Figure A3

Residuals Versus Fit Plot

The review of the residuals versus fits plot confirms that the residuals, indeed, are both approximately homoscedastic and evince no patterns—meaning that this particular model is correct and fits the data well.

Since the assumptions are satisfied, the analysis may proceed. In general, one finds that the ANOVA procedure works quite well even if the normality assumption has been violated, unless one or more of the distributions are highly skewed or if the variances are quite different.

Table A2

One-way ANOVA: OFY10, OFY11, OFY12

Source	DF	SS	MS	F	P
Factor	2	0.03336	0.1668	8.19	0.001
Error	32	0.06515	0.00204		
Total	34	0.09851			
S=0.04512	R-Sq = 33.87%	R-Sq (adj) = 29.74%			

Since the F-test p -value = 0.001 < α = 0.05, we reject the null hypothesis and conclude that there is a difference in mean OCS attrition rates for 2010, 2011, and 2012.

To confirm this, the multiple comparison results are examined, which use family error rates of 0.05. The Tukey method used has built-in protection against false positive results.

Table A3

Grouping Information Using Tukey Method

Year	N	Mean	Grouping
2010	12	0.14405	A
2011	12	0.09604	B
2012	11	0.06916	B

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals

All Pairwise Comparisons

Individual confidence level = 98.06%

Table A4

2010 subtracted from:

Year	Lower	Center	Upper
2011	-0.09334	-0.04802	-0.00269
2012	-0.12124	-0.07489	-0.02855

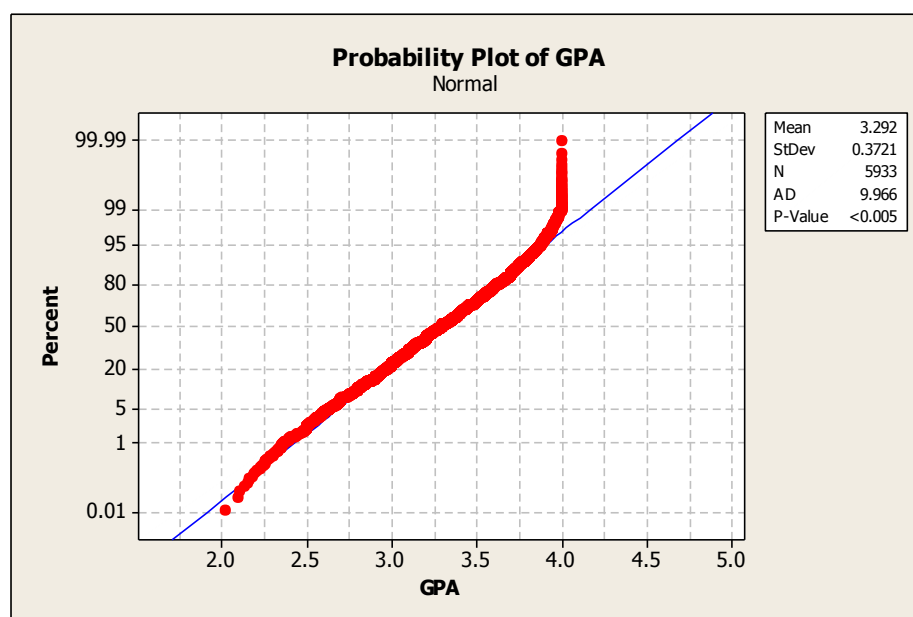
Since the confidence interval for FY11 and FY12 when FY10 has been subtracted does not contain zero, there is significant evidence at $\alpha = 0.05$ for differences in means between fiscal year 2010 and fiscal years 2011, and 2012.

Appendix B

Analysis of Variance of Candidate Quality 2010-2012

Figure B1

Probability Plot of GPA



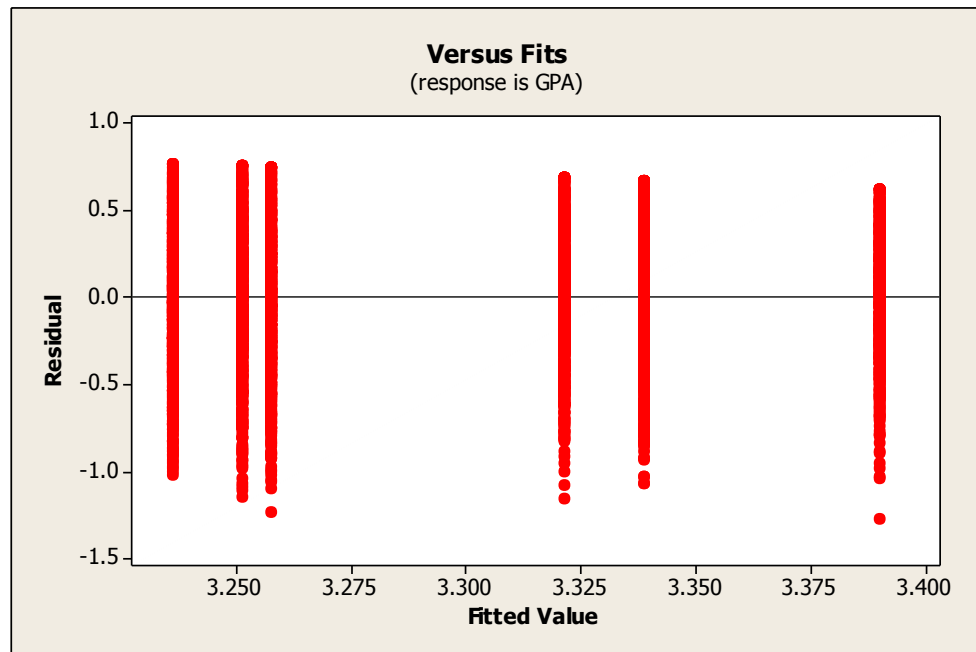
In this instance, the GPA for OCS exhibits a ceiling effect. This occurs when many of the Officer Candidates have GPA scores that are at or near the possible upper limit (i.e., ceiling) of 4.0. The ceiling effect makes analysis difficult because it reduces the amount of variation in a variable.

You may recall that the Anderson-Darling (AD) normality test measures the area between the fitted line and the nonparametric step function. The statistic is a squared distance that is weighted more heavily in the tails of the distribution.

The small Anderson-Darling (AD) value (9.966) indicates that the distribution fits the data better. However, the p -value is extremely low, necessitating the consideration of rejecting the null hypothesis of normality. However, in assessing the closeness of the points to a straight line, “imagine a fat pencil lying along the line. If all the points are covered by this imaginary pencil, a normal distribution adequately describes the data.” (Montgomery, *Design and Analysis of Experiments*, 6th Edition, p 39.)

In addition, the ANOVA procedure is relatively robust to departures from normality.

Figure B2

Residual Versus Fits Plot

The review of the residuals versus fits plot confirms that the residuals, indeed, are both approximately homoscedastic and evince no patterns. Consequently, this model is correct and fits the data well.

Table B1

One-way ANOVA: GPA versus Shipping Year

Source	DF	SS	MS	F	P
Years	5	16.332	3.266	24.05	0.000
Error	5927	804.882	0.0136		
Total	5932	821.214			
S=0.3685	R-Sq = 1.99%	R-Sq (adj) = 1.91%			

Table B2

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	Standard Deviation
2007	668	3.3388	0.3763
2008	978	3.2364	0.3927
2009	978	3.2516	0.3760
2010	1253	3.2579	0.3735
2011	1118	3.3217	0.3498
2012	783	3.3902	0.3362
Pooled StDev			0.3685

Hsu's MCB (Multiple Comparisons with the Best)

Family error rate = 0.05

Critical value = 2.26

Table B3

Intervals for level mean minus largest of other level means

Level	Lower	Center	Upper
2007	-0.0951	-0.0513	0.000
2008	-0.1937	-0.1538	0.000
2009	-0.1772	-0.1386	0.000
2010	-0.1701	-0.1322	0.000
2011	-0.1072	-0.0684	0.000
2012	0.0000	0.0513	0.0951

Hsu's Multiple Comparisons with the Best compares each mean with the best (largest) of the other means, which in this case is fiscal year 2012. No evidence exists that fiscal years 2007 through 2011 are the best because the upper interval endpoints are 0, the smallest possible value. Fiscal year 2012 is best, although it is no more than 0.0951 better than its closest competitor.

Table B4

Grouping Information Using Tukey Method

Year	N	Mean	Grouping
2012	783	3.3902	A
2007	668	3.3388	AB
2011	1118	3.3217	B
2010	1253	3.2579	C
2009	1133	3.2516	C
2008	978	3.2364	C

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals

All Pairwise Comparisons among Levels of Shipping Year

Individual confidence level = 99.56%

Table B5

Shipping Year = 2007 subtracted from:

Year	Lower	Center	Upper
2008	-0.1552	-0.1025	-0.0498
2009	-0.1385	-0.0873	-0.0360
2010	-0.1312	-0.0809	-0.0306
2011	-0.0685	-0.0171	0.0343
2012	-0.0040	0.0513	0.1066

Table B5

Shipping Year = 2008 subtracted from:

Year	Lower	Center	Upper
2009	-0.0306	0.0152	0.0610
2010	-0.0233	0.0215	0.0663
2011	0.0394	0.0854	0.1313
2012	0.1034	0.1538	0.2041

Table B6

Shipping Year = 2009 subtracted from:

Year	Lower	Center	Upper
2010	-0.0367	0.0063	0.0494
2011	0.0259	0.0702	0.1144
2012	0.0898	0.1386	0.1874

Table B7

Shipping Year = 2010 subtracted from:

Year	Lower	Center	Upper
2011	0.0206	0.0638	0.1070
2012	0.0844	0.1322	0.1801

Table B8

Shipping Year = 2011 subtracted from:

Year	Lower	Upper	Center
2012	0.0195	0.0684	0.1174

Figure B3

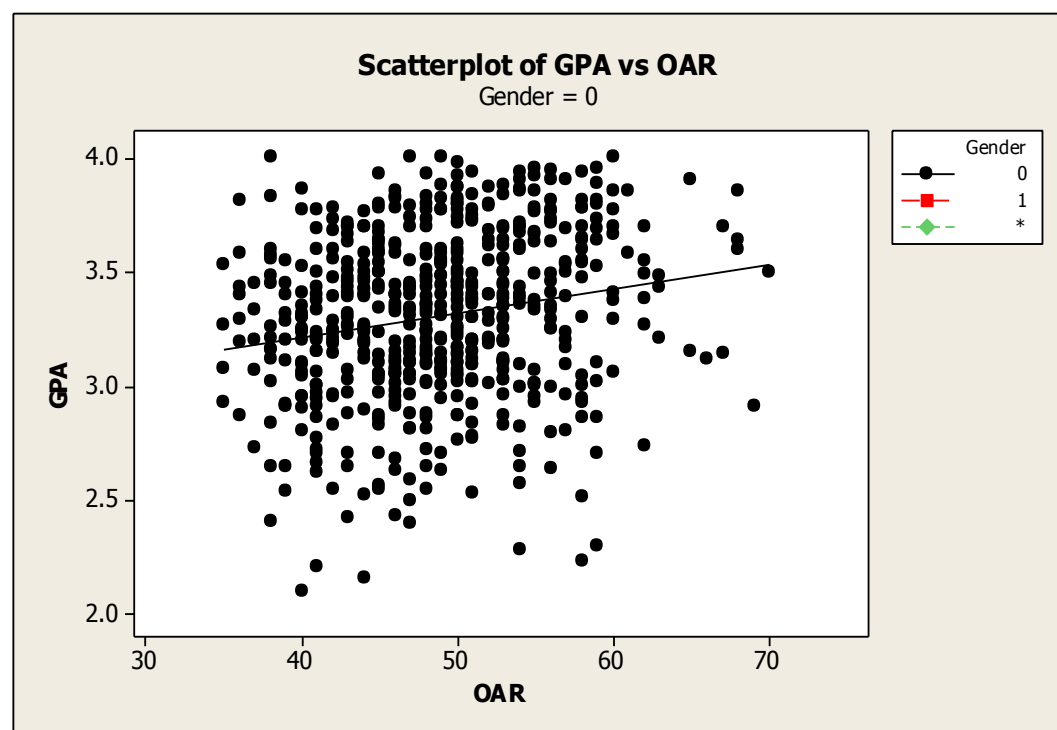
Scatterplot of GPA Versus OAR

Figure B4

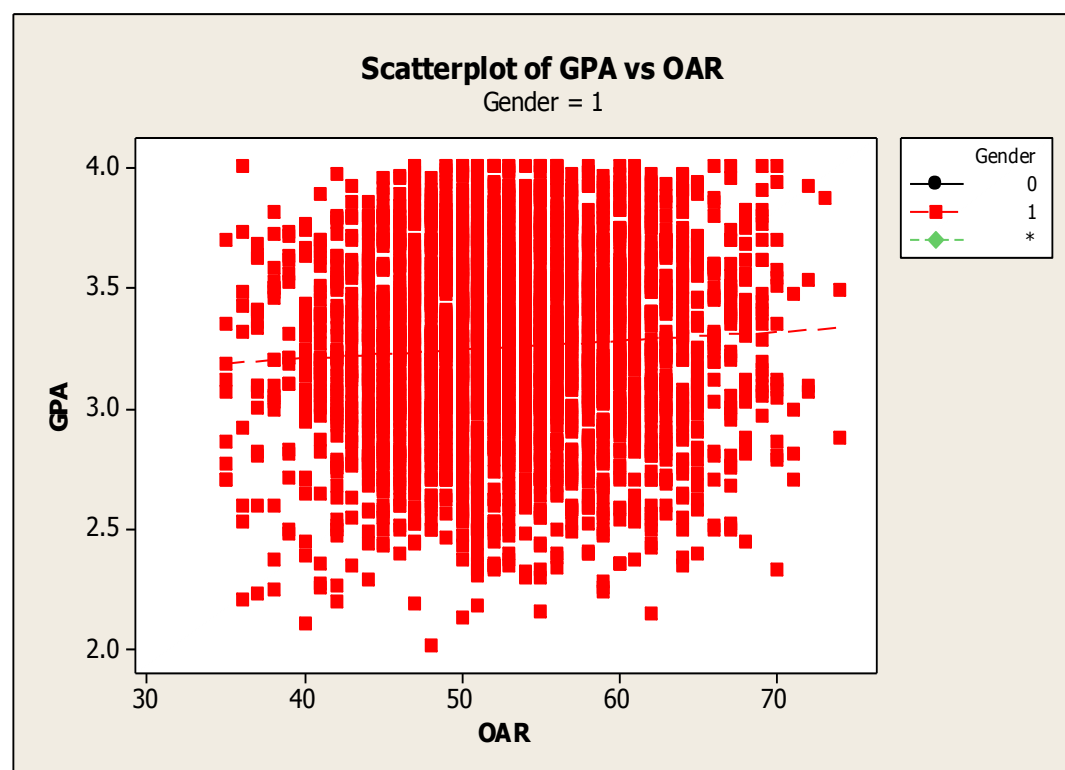
Scatterplot of GPA Versus OAR

Table B9

One-way ANOVA: OAR versus Shipping Year

Source	DF	SS	MS	F	P
Year	5	4115.2	823	16.55	0.000
Error	3861	191954.0	49.7		
Total	3866	196069.3			
S=7.051	R-Sq = 2.10%	R-Sq(adj) = 1.97%			

Table B10

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	StDev
2007	169	52.373	6.984
2008	603	51.265	6.744
2009	823	51.612	7.163
2010	949	51.638	7.114
2011	836	53.565	7.072
2012	487	53.951	7.095
Pooled StDev			7.051

Pooled StDev = 7.051

Hsu's MCB (Multiple Comparisons with the Best)

Family error rate = 0.05

Critical value = 2.27

Table B11

Intervals for level mean minus largest of other level means

Level	Lower	Center	Upper
2007	-3.009	-1.578	0.000
2008	-3.662	-2.685	0.000
2009	-3.254	-2.338	0.000
2010	-3.206	-2.313	0.000
2011	-1.300	-0.386	0.527
2012	-0.527	0.386	1.300

Table B12

Grouping Information Using Tukey Method

Year	N	Mean	Grouping
2012	487	53.951	A
2011	836	53.565	A
2007	169	52.373	AB
2010	949	51.638	B
2009	823	51.612	B
2008	603	51.265	B

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals

All Pairwise Comparisons among Levels of Shipping Year

Individual confidence level = 99.56%

Table B13

Shipping Year = 2007 subtracted from:

Year	Lower	Center	Upper
2008	-2.856	-1.107	0.641
2009	-2.457	-0.760	0.936
2010	-2.413	-0.735	0.942
2011	-0.503	1.192	2.886
2012	-0.216	1.578	3.372

Table B14

Shipping Year = 2008 subtracted from:

Year	Lower	Center	Upper
2009	-0.730	0.347	1.424
2010	-0.674	0.372	4.419
2011	1.226	2.299	3.373
2012	1.461	2.685	3.910

Table B15

Shipping Year = 2009 subtracted from:

Year	Lower	Center	Upper
2010	-0.932	0.025	0.982
2011	0.966	1.952	2.939
2012	1.190	2.338	3.487

Table B16

Shipping Year = 2010 subtracted from:

Year	Lower	Center	Upper
2011	0.974	1.927	2.880
2012	1.193	2.313	3.433

Table B17

Shipping Year = 2011 subtracted from:

Year	Lower	Center	Upper
2012	-0.759	0.386	1.532

Appendix C

Analysis of Variance for RTC attrition 2010-12

Two primary assumptions buttress the use of the ANOVA procedure:

- (1) The values for each level follow a Normal distribution, and
- (2) The variances are the same for each level (Homogeneity of Variance).

Table C1

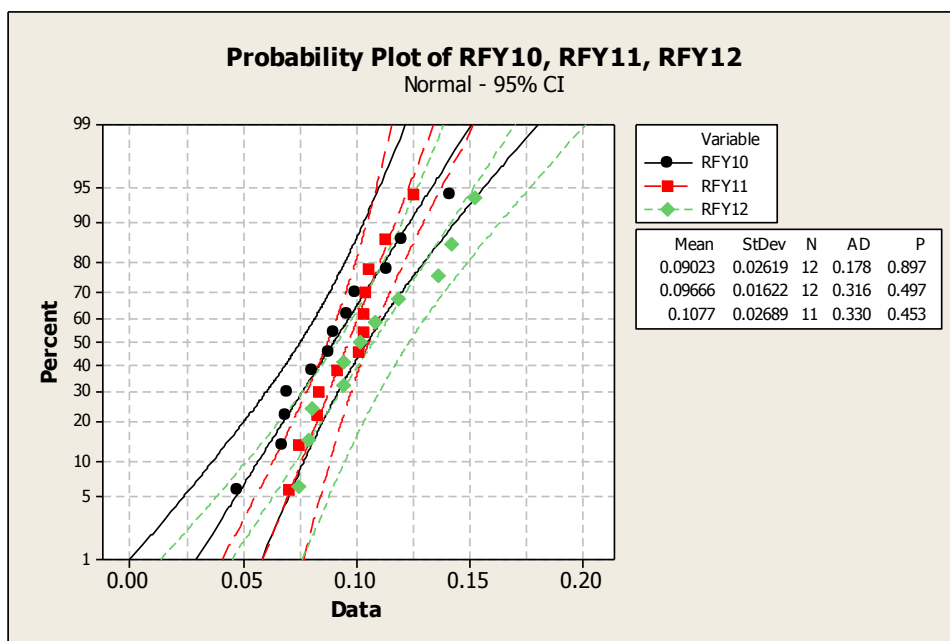
Monthly Mean RTC Attrition FY 10-12

R FY10	R FY11	RFY 12
0. 120055	0. 083806	0.07 4875
0. 047299	0. 070558	0.10 1747
0. 114028	0. 091874	0.14 2504
0. 090128	0. 103105	0.07 9242
0. 067458	0. 074483	0.09 4397

0. 087725	0. 103949	0.09 4428
0. 080303	0. 082955	0.11 9083
0. 068618	0. 113214	0.15 2983
0. 141357	0. 101065	0.08 0621
0. 069826	0. 105944	0.13 6502
0. 095903	0. 125290	0.10 8367
0. 100016	0. 103734	

Figure C1

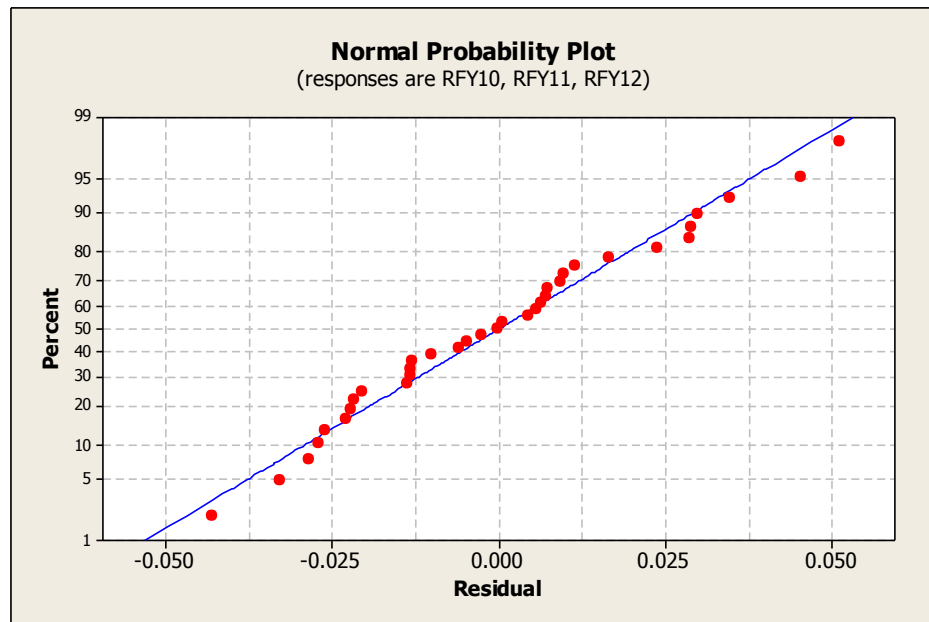
Probability Plot for RTC Attrition FY10-12



Since the sample size is small $n = 12, 12,$ and 11 (less than 30), the normal probability plot in Minitab was used to check that the samples do, indeed, come from a normal distribution (see above). Since the normal probability plot suggests that the data are normally distributed, using the fat pencil test, the ANOVA can be used. P -values for the Anderson-Darling test. Since the p -values of $0.897, 0.497,$ and 0.453 are all larger than a significant level value of $\alpha = 0.05$, it can be concluded at the 5% significance level that the distributions of the differences are normal.

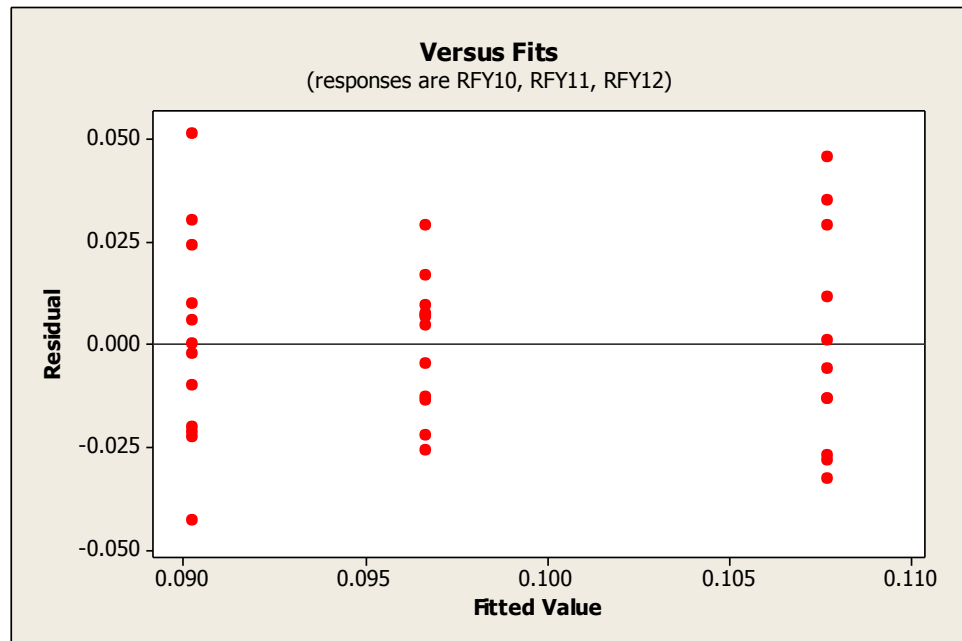
Figure C2

Normal Probability Plot for RTC Attrition FY 10-12



The normal probability plot is not too far from a straight line. It seems that the normality assumption is satisfied for these data.

Figure C4

Residuals Versus Fit

The review of the residuals versus fits plot confirms that the residuals, indeed, are both approximately homoscedastic and evince no patterns—meaning that this particular model is correct and fits the data well.

Since the assumptions are satisfied, the analysis may proceed. In general, one finds that the ANOVA procedure works quite well even if the normality assumption has been violated, unless one or more of the distributions are highly skewed or if the variances are quite different.

Table C2

One-way ANOVA: RFY10, RFY11, RFY12

Year	DF	SS	MS	F	P
Factor	2	0.001782	0.000891	1.61	0.215
Error	32	0.017671	0.000552		
Total	34	0.019454			
S=0.02350	R-Sq = 9.16%	R-Sq (adj) = 3.48%			
Source	DF	SS	MS	F	P

Since the F-test p -value = 0.215 > α = 0.05, we fail to reject the null hypothesis and conclude that there is no difference in mean RTC attrition rates for 2010, 2011, and 2012.

As a further protection against obtaining false positive results, the multiple comparison results are examined, which use family error rates of 0.05. The Tukey method used has built-in protection against false positive results.

Table C3

Individual 95% CIs For Mean Based on Pooled StDev

Level	N	Mean	SrDev
2010	12	0.09023	0.02319
2011	12	0.09666	0.01622
2012	11	0.10770	0.02689
Pooled StDev			0.02350

Table C4

Grouping Information Using Tukey Method

Year	N	Mean	Grouping
2012	11	0.10770	A
2011	12	0.09666	A
2010	12	0.09023	A

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals

All Pairwise Comparisons

Individual confidence level = 98.06%

Table C5

2010 subtracted from:

Year	Lower	Center	Upper
2011	-0.01717	0.00644	0.03005
2012	-0.00666	0.01748	0.04162

Table C5

2011 subtracted from:

Year	Lower	Center	Upper
2012	-0.01310	0.01104	0.03518

Since the confidence intervals all contain zero, there is no significant evidence at $\alpha = 0.05$ for differences in means.